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Upper Willamette
Resource Conservation
and Development Project

Resource Data for Agricultural Development in Linn, Lane, and Benton Counties

Assisted by
Cooperative Extension Service
U.S. Department of Agriculture
Soil Conservation Service
Portland, Oregon
1972

USDA-SCS-PORTLAND, OREGON 1972

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ACKNOWLEDGMENT

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Loyd A. Burnett
Project Coordinator

The R.C. & D. Sponsors are the following Soil & Water Conservation Districts: Benton, East Linn, Lincoln, Linn, Lane, North Lane, Siuslaw, and Upper Willamette; the county governments of Benton, Lane, Linn, and Lincoln; and the State Soil & Water Conservation Commission. (Soil & Water Conservation Districts are legal subdivisions of state government organized by local landowners to promote conservation and natural resource development. The State Soil & Water Conservation Commission is appointed by the Governor and supervises the organization and operation of the SWCD's throughout the state.

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U. S. DEPT. OF AGRICULTURE
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INTRODUCTION

In 1965, the Upper Willamette Resource Conservation & Development Project was begun by local people* who were concerned about the wise use of their resources. To make the area a better place in which to live, work and play, the sponsors' goals are broad and varied--recreation; watershed protection; new industries; improved markets for crops, livestock and forest products; and land use planning assistance, to name a few. The U. S. Department of Agriculture has assigned the Soil Conservation Service to administer the federal part of the program, and a project coordinator works full time with the Project Sponsors and cooperating local, state and federal agencies in carrying out the authorized project plan. The Cooperative Extension Service, Oregon State Department of Forestry and SCS have specialists assigned to the project.

The Upper Willamette Valley is rapidly developing with a population increase rate exceeding both state and national averages. Urban expansion, pollution problems, high land values, and other conditions related to rapid development are forcing many changes in land use and crops. The area has many natural and human resources, but it is apparent that the commitment of these resources must be made judiciously to protect and improve its livability and economic strength. Since land use plans and crop selections are important factors in setting the patterns of development, the Agriculture Committee of the Upper Willamette RC&D Project believe the data in this book should be of significant assistance in making the proper development decisions.

This reference book is a compilation of data on soil and water resources and of social and economic conditions of the Upper Willamette Valley in Oregon. It is not intended to be an all inclusive source. It is designated to provide easily accessible material on some of the more generally used information. Included are specific data, sources of additional information, and identification of assistance available for guidance on production, processing, and marketing of agricultural products.

Copies of this reference book will be made available to each office of the agencies providing assistance in this area. The book is not considered to be a published document and is not available for general public distribution.

DESCRIPTION OF THE AREA

Location

The data in this book refers specifically to soil and water resources and social and economic conditions in the Upper Willamette Area of Linn, Lane and Benton counties in Oregon. This area is approximately 70 miles south of Portland and 175 miles north of the California border, occupies the southern half of the Willamette Basin, and encompasses 6,409 square miles or 6½% of the area of the state.

The southern Willamette Valley lies between the Cascade Range on the east and the Coast Range on the west. With few exceptions, it is an area of low relief, lying between elevations of about 190 to 450 feet above sea level. It is almost 110 miles long and 35 miles wide in its northern part. Average width is 25 miles.

Climate

The Upper Willamette Valley has a modified marine climate in which there is considerable variation as you go from the Valley floor to the summit of the Cascade Mountains to the east or the Coastal Range to the west. This climate and its variations are reflected in mild, wet winters and warm, dry summers.

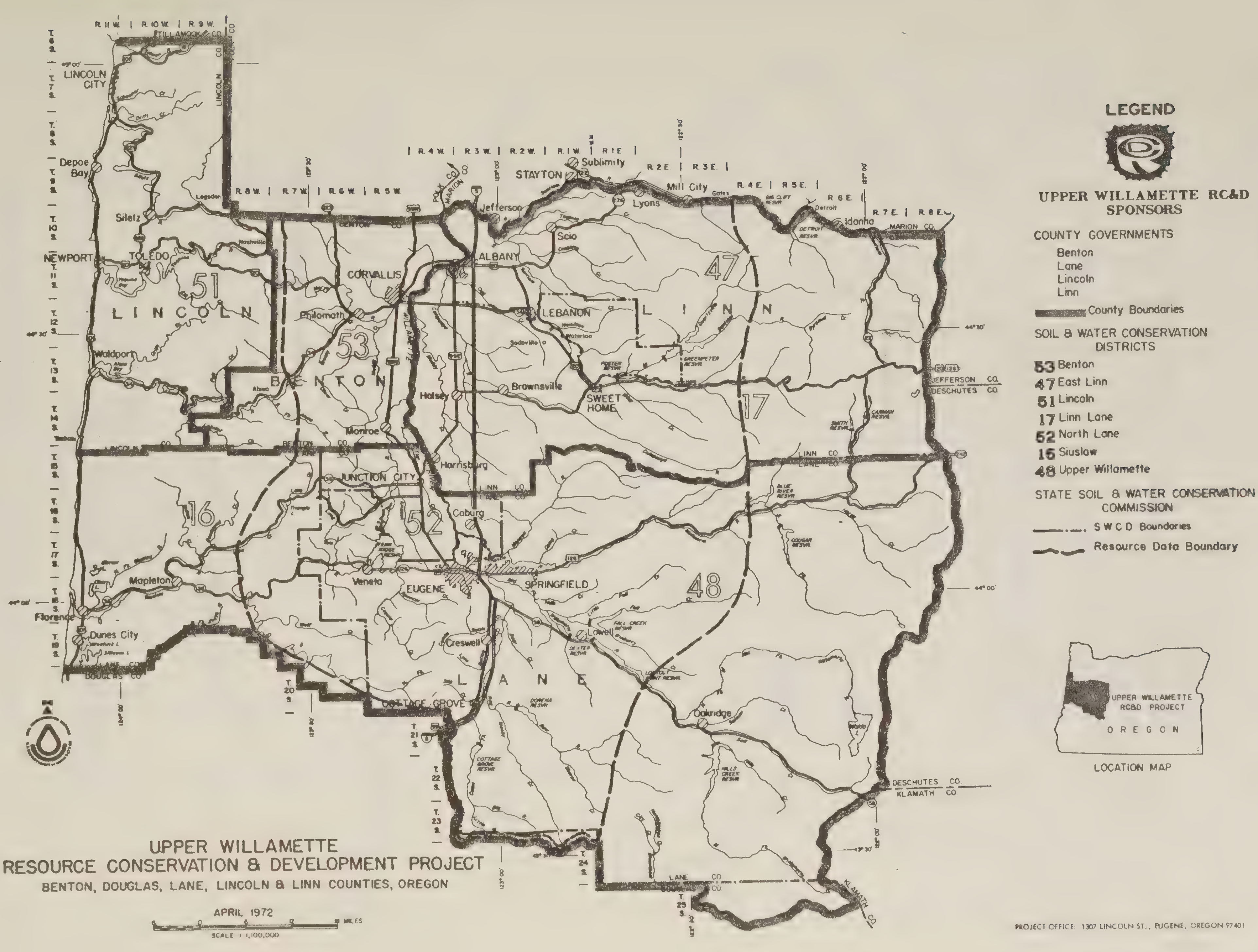
Temperature and precipitation are directly influenced by air masses coming from the Pacific Ocean. The Coast Range, rising to an elevation of 1,500-2,500 feet, acts as a barrier to coastal fog, but active storms cross these ridges with little hindrance. Air of relatively constant temperature, brought in by prevailing westerly and southwesterly winds from the nearby Pacific, produce a long growing season. Extremes in temperature are comparatively small. The Cascade Range, reaching elevations of 5,000-10,000 feet, blocks westward passage of all but the strongest continental air masses. However, when air does flow into the Valley from the east, dry, hot weather develops in summer causing extreme fire hazard, while in winter this situation causes clear, sunny days and cool, frosty nights.

Within the Basin, climate varies with elevation and topography. The floor of the Basin, partially in the rain shadow of the Coast Range, has the least precipitation (35-40 inches), the mildest winters, and the longest, driest summer. Growing season (April-October) precipitation totals about six inches and, during the summer months (July, August, September) averages less than one inch per month. Irrigation is necessary to obtain maximum production for many crops.

The change in seasonal rainfall is quite gradual; the first fall rains usually arrive during the second or third week of September, after which rain gradually increases until about the first of January and then slowly decreases to the latter part of June. July and August are normally very dry, occasionally passing without rainfall. When winter snow occurs, it usually melts immediately after falling, but can cover the ground to a depth of one to three inches, with infrequent heavier snow cover generally melting in a few days.

Temperatures are so largely controlled by maritime air from the Pacific that long periods of extremely hot or severely cold weather seldom occur. Maximums of 95° or higher have occurred only in the months of June, July, August and September, averaging three days a year. Minimums of 20° or lower are infrequent, averaging five per year. The temperature has lowered to 32° or below as late as May 31, and as early as September 24, but the average dates of their last occurrence in the spring and first occurrence in fall are respectively April 9 and October 31. The average period between killing frosts is approximately 210 days. Temperature, growing season, incidence of sunshine and soils are all favorable for the growth of a variety of crops. Violent thunderstorms, hail, dust or windstorms are rare.

The long growing season and mild temperatures are favorable for diversified agriculture and numerous crops adapted to these climatic conditions. Table beets, green beans, sweet corn, carrots, strawberries, blackberries and raspberries are processed or frozen in large quantities. Peaches, pears, cherries, plums and rhubarb are also canned, with cherries and pears comprising the greater pack. Other agricultural products are apples, plums, peppermint, spearmint, tomatoes, cucumbers and squash. Non-irrigated farms produce hay, grain, grass seed, livestock, tree fruits and nuts.

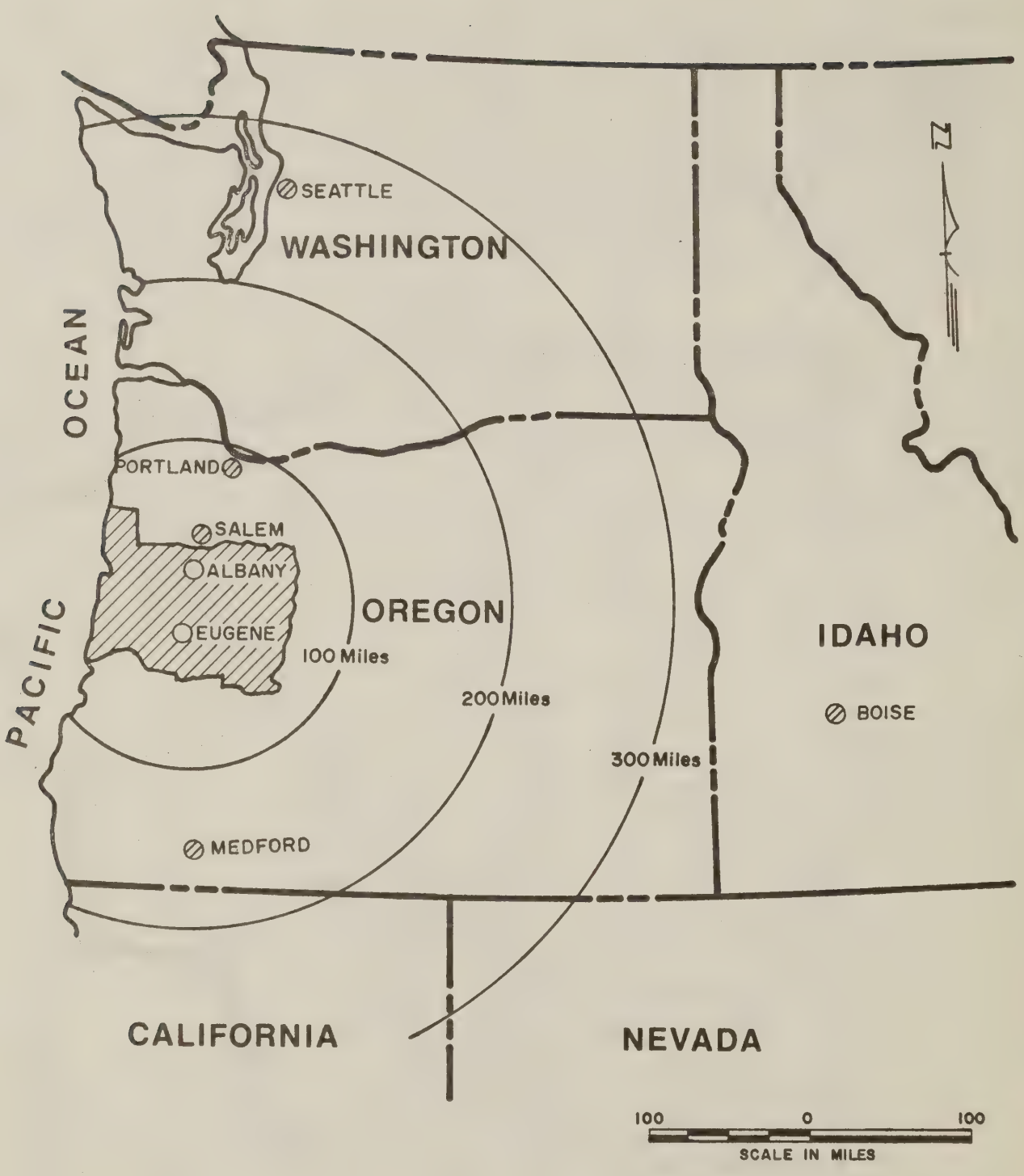


UPPER WILLAMETTE
RESOURCE CONSERVATION & DEVELOPMENT PROJECT

BENTON, DOUGLAS, LANE, LINCOLN & LINN COUNTIES, OREGON

APRIL 1972

SCALE 1:1,100,000



DISTANCE LOCATION MAP

UPPER WILLAMETTE RESOURCE CONSERVATION & DEVELOPMENT PROJECT

PROJECT AREA

URBAN CENTERS IN THE PROJECT AREA

SELECTED DISTANT URBAN CENTERS

PRECIPITATION AND TEMPERATURES

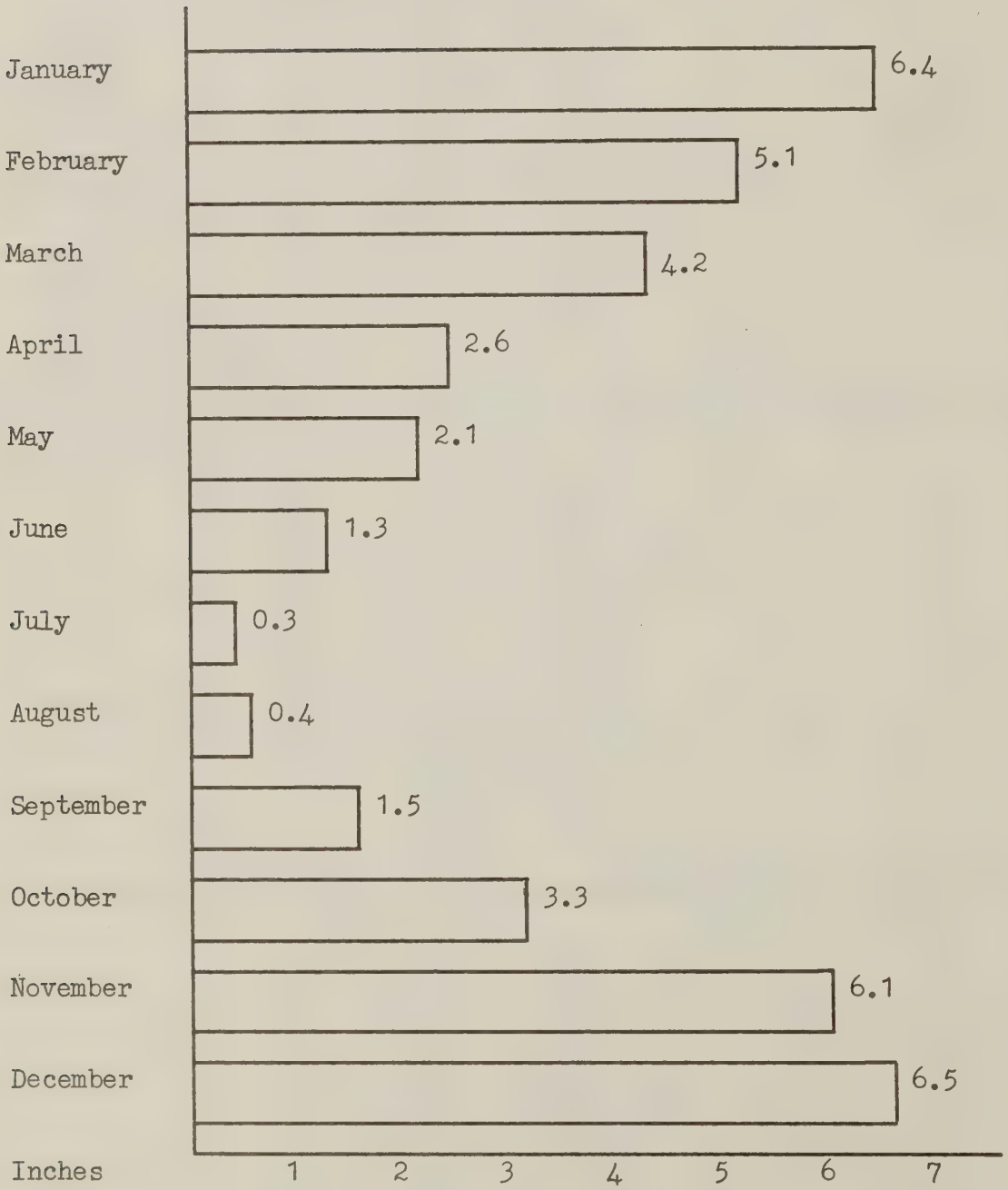
City	Precipitation	Temperature				Length of Record
		Normal High	Normal Low	Extreme High	Extreme Low	
ALBANY (Elevation 220 ft.)						69 yrs.
Jan.	6.3 inches	45.2	33.3	68	-3	
Feb.	5.1	50.4	35.1	73	2	
Mar.	4.2	56.3	41.2	81	9	
Apr.	2.8	62.4	40.7	91	25	
May	2.2	68.9	44.3	98	29	
June	1.4	74.4	49.3	103	32	
July	0.5	81.9	52.2	104	35	
Aug.	0.5	81.9	51.7	103	40	
Sep.	1.7	71.7	47.9	98	29	
Oct.	3.2	64.3	42.8	90	25	
Nov.	6.2	52.7	38.1	72	14	
Dec.	6.8	46.7	35.1	64	-15	
Annual Average 40.9 inches						
CORVALLIS (Elevation 225 ft.)						61 yrs.
Jan.	6.5	45.3	32.5	64	-1	
Feb.	5.2	50.5	35.1	69	-5	
Mar.	4.1	55.3	36.9	79	13	
Apr.	2.6	62.3	40.5	89	24	
May	1.9	68.8	44.9	95	28	
June	1.1	73.4	49.3	102	32	
July	0.3	81.3	51.8	107	36	
Aug.	0.4	80.9	51.4	102	37	
Sep.	1.6	76.7	48.8	103	26	
Oct.	2.9	64.7	43.5	90	13	
Nov.	6.4	53.1	37.5	73	10	
Dec.	6.1	48.1	35.6	66	-14	
Annual Average 39.1 inches						
EUGENE (Elevation 359 ft.)						31 yrs.
Jan.	6.3	45.3	32.8	64	-4	
Feb.	5.0	50.2	34.9	69	-3	
Mar.	4.3	55.1	36.8	74	20	
Apr.	2.4	61.9	39.6	86	27	
May	2.1	68.1	44.0	91	28	
June	1.4	73.8	48.1	100	35	
July	0.3	82.2	51.0	105	39	
Aug.	0.4	81.6	50.2	100	38	
Sep.	1.3	76.2	46.8	101	32	
Oct.	3.8	64.2	42.1	87	24	
Nov.	5.6	52.6	38.4	71	14	
Dec.	6.6	47.5	36.0	67	10	
Annual Average 39.5 inches						

National Weather Service records

AVERAGE ANNUAL PRECIPITATION

Composite of Weather Statistics

Albany - Corvallis - Eugene



SOCIAL AND ECONOMIC PROFILE

This section presents some of the social and economic features of the Upper Willamette Valley. The information presented is intended to give only a general description of these items. For more detailed information, please contact sources listed in the Appendix. For instance, the "Resource Analysis" series of publications compiled on a county basis by the Resource Development Section, Cooperative Extension Service, Oregon State University, Corvallis, provides a general background of a county's natural and human resources, industries and public service facilities.

Population*

It is significant to note that in 1970 the Upper Willamette Valley contained 330,000 people, which is nearly 16 percent of Oregon's population of 2,091,385. (The total population of Linn, Lane and Benton counties was 339,048; however, since 8,000-10,000 people live in western Lane County, outside the area covered by this report, the population of the Upper Willamette Valley area is approximately 330,000.) Almost two-thirds of the population reside in urban areas, and one-third live in rural areas.

County	Population
Benton	53,776
Linn	71,914
Lane	204,310
Total	330,000

Major urban areas include Eugene-Springfield, Albany, and Corvallis. Together, these areas contain nearly 50 percent of the total population.

City	Population
Albany	18,181
Corvallis	35,153
Eugene	76,349
Springfield	27,105
Total--major urban areas	156,788

Smaller incorporated communities of 1,000 or more include:

City	Population
Brownsville	1,034
Creswell	1,199
Cottage Grove	6,004
Harrisburg	1,311
Junction City	2,373
Lebanon	6,636
Philomath	1,688
Sweet Home	3,700
Veneta	1,377
Total	25,322

* 1970 U. S. Census

North of Linn, Lane and Benton counties are two cities important for processing of agricultural commodities: Salem, with a population of 68,296 and Stayton with 3,137 people.

The U. S. Department of Health, Education & Welfare estimates a future growth of 21 percent per decade. In Appendix G--Economic Base, Willamette River Basin Study, it is estimated future population in the Upper Willamette Valley will be about 432,550 by 1980. In addition, there is a seasonal influx of field labor for farm crop harvesting. Another population fluctuation is the attendance of students at the two major universities--Oregon State University, Corvallis and the University of Oregon, Eugene.

Labor Force

The 1970 labor force for the Upper Willamette Valley included 144,000 persons with 134,000 working and 10,000 unemployed. This amounts to 6.8 percent of the labor force unemployed. A primary factor in the 1970 high unemployment rate was the distressed condition of the lumber and wood products industry in the past several years. The area's 1970 unemployment rate was 40 percent greater than the national average of 4.9 percent and 15 percent greater than the state's average rate of 5.9 percent. However, in 1971 employment in the woodland industry showed considerable improvement.

Transportation

Interstate Hwy. 5, the main north-south freeway through western Oregon, connects Seattle, Portland, Albany, Eugene and San Francisco. Several state highways cross east and west from the coast to central Oregon, and numerous improved all-weather county roads connect all parts of the Upper Willamette Valley. This secondary road system allows easy movement of agricultural commodities and products, and the excellent direct highway system allows easy tapping of the large labor pools in metropolitan areas of Eugene-Springfield and Albany-Corvallis. (Highway 99 also provides major north-south road transportation.

The main line of the Southern Pacific Railroad connects the area with California on the south and Portland on the north. From these points, rail transportation is available to the rest of the nation. Nineteen railroad companies maintain offices in the metropolitan areas (Listings and addresses can be obtained from telephone directories.). The Southern Pacific has a classification yard, repair shop and roundhouse in Eugene. Supporting industries include railroad freight, car leasing corporation and one railroad construction company.

Two major nationwide passenger and package express bus lines service the communities--Continental Trailways and Greyhound Bus Lines. Dorsey Charter Bus Service of Corvallis and Eugene handles special contract transportation service.

Major municipal airports, capable of handling jet aircraft, are located at Eugene and Corvallis. United Airlines and Hughes Airwest make connections with intercontinental airports at Portland, Oregon and San Francisco, California. There are a number of smaller airports that handle private, commercial and pleasure aircraft.

Port facilities of Portland are in an excellent protected harbor on the Columbia River, open to the ships and seaports of the world. The full range of maritime transportation support services are available. These services include foreign trade departments of banks with worldwide and domestic correspondents, any kind of commercial, cargo and maritime insurance, steamship agents, stevedoring, customhouse brokers and freight forwarders.

Public Utilities

WATER--Adequate water supply for domestic and some industrial use is available through each of the incorporated cities and many Water Districts serving the residential communities. Industrial water can also be obtained through the State of Oregon from the many reservoirs storing over a million acre feet in the Upper Willamette Valley.

GAS--Wholesale pipeline service by El Paso Natural Gas Company supplies the area, tapping wells in Peace River Region, Canada, with interties to fields in Wyoming, Utah and Nevada. Northwest Natural Gas Company, the only natural gas distributor throughout the RC&D Project Area, services all communities. In addition, propane or liquid petroleum is also available through local petroleum product dealers in most communities.

ELECTRICITY--There is an abundance of cheap electrical power. Metropolitan Eugene is the heaviest user of electricity per capita of any city in the United States. Engineering studies by Eugene Water & Electric Board and Pacific Power & Light have indicated that the peak load of 331 megawatts in 1968 will reach 450 mw in 1973 and double to 670 mw by 1975. Electric power service is furnished by one major private utility, PP&L; two municipal companies, EWEB and Springfield Municipal Power & Water (SUB); and three Rural Electrification Administration (REA) cooperatives--Blachly-Lane County Co-op Electric Assn., Lane County Electric Cooperative, and Consumers Power, Inc.

All power companies in the area have interties for mutual power support, and are part of the power supply and users of Bonneville Power Administration (BPA) with its interties in Columbia Storage Power Exchange (CSPE). The CSPE is based upon a treaty under which Canada's share of downstream benefits from three dams in Canada have been purchased by northwest utilities and exchanged for distribution through Bonneville Power Administration transmission facilities.

TELEPHONE--The Upper Willamette Valley is served by Pacific Northwest Bell (PNB) and nine independent companies--Prairie Telephone Cooperative, Monroe Telephone Company, Linn County Scio Mutual Telephone Assn., Linn County Telephone Company, Halsey Telephone Company, Creswell Telephone Company, United Telephone Company of the Northwest, People's Telephone Company and Stayton Coop. Telephone Company.

Industry*

"Growth of diversified manufacturing in recent years has been changing Oregon's largely resource-oriented economy, which historically has been heavily dependent on forest and agriculture products as the basic foundation.

* Oregon Blue Book

Forest products, including lumber and plywood, and paper and allied products, continues to be Oregon's leading industry. Agriculture is Oregon's second leading industry and is the base for an expanding food processing industry where an average of 21,000 persons are employed in canning, freezing, and other operations.

"The metals-related group of industries, including primary metals, fabricated metals, machinery, electrical machinery and transportation equipment, has been the state's pacesetter in growth of manufacturing. Manufacture of travel trailers and mobile homes has blossomed into an important new industry. This growth of diversified manufacturing is providing new employment opportunities needed annually to take care of the young people entering the labor market from schools and colleges."

Education, Culture, Recreation, etc.

The Upper Willamette Valley is particularly well provided with educational facilities. In addition to the usual elementary and high schools, two of the major universities in the state's educational system are within the area. Oregon State University at Corvallis is a land-grant institution and in 1968 became one of the first half dozen sea-grant centers of America. (The OSU Marine Science Center at Newport has become their important "Campus on the Coast.") At the University of Oregon, a liberal arts university, two years of unspecialized lower-division work in the arts and sciences are basic to all programs. (The medical, dental and nursing schools are located at the University's Portland campus.)

Oregon's community college system is one of the newer statewide systems in the United States, and Lane Community College in Eugene and Linn-Benton Community College, Albany, offer lower division, vocational, technical and adult education programs. In addition, there are special schools such as: Beautician, Electronic Computer Programming, Barber College, Business Colleges, Real Estate, Meat Cutting, Pet Grooming, etc.

Churches of some thirty denominations are in the Upper Willamette Valley. Many of these have been responsible in organizing and operating schools at all levels from primary grades through college.

Recreation opportunity is as broad as the individual's imagination. Skiing, camping, mountain climbing, fishing, boating, hunting, golfing, gardening, archery, and rock collecting are only a few of the many activities available. Forty percent of the Upper Willamette RC&D Project is within the boundaries of the Willamette National Forest which contains the Mt. Jefferson, Mt. Washington, Three Sisters and Diamond Peak Wilderness Areas.

Several successful retirement homes and communities have been developed for the senior citizens and the metropolitan areas provide many programs of interest to them as well as those who have not reached the "golden years."

Medical facilities are modern and well staffed with specialists available in many fields to adequately meet the needs of the large and growing population.

CIVILIAN LABOR FORCE - UPPER WILLAMETTE VALLEY 1/

(1970 annual averages)

	Linn County	Benton County	Eugene Metropolitan Area	Total
EMPLOYMENT:				
Agricultural	2,850	1,020	4,150	8,020
Non-Agricultural:				
Contract Construction	1,150	460	3,000	4,610
Transp.-Comm.-Utilities	1,040	670	4,150	5,860
Wholesale & Retail Trade	3,420	2,830	14,450	20,700
Finance, Ins. & Real Estate	710	470	2,950	4,130
Service and Miscellaneous	2,330	2,310	10,100	14,740
Government	3,150	9,650	16,450	29,250
Total Non-Manufacturing	11,800	16,390	51,100	79,290
Lumber and Wood Products	4,610	1,450	13,600	19,660
Other Durables	2,560	370	1,850	4,780
Total Durable Goods	7,170	1,820	15,450	24,440
Food	1,000	280	1,550	2,830
Other Non-Durables	1,010	230	1,450	2,690
Total Non-Durable Goods	2,010	510	3,000	5,520
Total Manufacturing	9,180	2,330	18,450	29,960
Total Wage and Salary Workers	20,980	18,720	69,550	109,250
Self-employed, Unpd. & Dom.	3,250	2,740	10,700	16,690
Total Non-Agricultural	24,230	21,460	80,250	125,940
TOTAL EMPLOYMENT	27,080	22,480	84,400	133,960
UNEMPLOYMENT:	2,160	1,160	6,400	9,720
Percent of Labor Force	7.3	4.9	7.0	6.8
WORKERS IN LABOR-MANAGEMENT DISPUTES	260	0	0	260
TOTAL CIVILIAN LABOR FORCE	29,500	23,640	90,800	143,940

1/ Source: State of Oregon, Department of Employment, Research and Statistics

ELECTRIC POWER SERVICE AREAS			
Companies	Benton County	Lane County	Linn County
PP&L	Corvallis + eastern portion of Benton Co.	Springfield	Albany Brownsville Lebanon Sweet Home + major portion of Linn County
EWEB		Eugene McKenzie River Blue River	
SUB		Springfield	
Blachly-Lane		central and northwestern part of county	
Lane County Electric Cooperative		southern and western part of county	
Consumers Power	Corvallis + major portion of Benton Co.		small portion of western Linn County

TELEPHONE SERVICE AREAS			
Companies	Benton County	Lane County	Linn County
Pacific Northwest Bell	Corvallis (metropolitan area)	Eugene-Spfld. (metro. area) Junction City Marcola Leaburg Blue River Veneta Lowell Cottage Grove	Albany (metro. area) Shedd Harrisburg
Prairie Telephone Co-op	Philomath Bellfountain		
Monroe Tel. Co.	Monroe		
Linn County Scio Mutual Telephone Assn.			Scio
Linn County Telephone Co.			Lebanon Sweet Home Brownsville
Halsey Tel. Co.			Halsey
Creswell Tel.		Creswell	
United Telephone Co. of the Northwest		Oakridge	
People's Tel. Co.			Lyons Mill City Detroit
Stayton Co-op. Tel. Co.			Stayton

AGRICULTURAL DEVELOPMENT

Water Resources

Our basic natural resources are water and soil; they work together to support all living activity. Each day finds us making greater demands on our water supplies than before. Multiple uses of water include agriculture, industry, municipal, domestic, recreation, fish and wildlife, navigation and power development. The northwest is one of the few areas which is still blessed with an abundant supply of water that is easy to obtain for use without expensive treatment facilities. Sources of water are from surface runoff and from underground supplies.

Two distinct watershed patterns exist in the Upper Willamette Valley. The streams whose headwaters are in the Cascade mountains, Coast Range or foothill regions have steep gradients in the mountainous headwaters and flatten out in the flood plains. The second pattern is formed by streams whose headwaters are in the flood plain of the Willamette north of the Eugene-Springfield area. These streams have relatively flat gradients of less than six feet per mile.

In the area referred to in this report, there are five principal rivers that together form the Willamette River. They are the McKenzie, Calapooya and Santiam which drain the northern part of the Cascade Range, the Long Tom which drains the Coast Range, and the Coast Fork and Middle Fork of the Willamette River which drain the southern part of the valley. There are over 30,600 surface acres in the many mountain lakes and man-made reservoirs.

More than 10½ million acre feet of water falls in the Upper Willamette Valley each year. Storage for nearly 2 million acre feet has been constructed by the Corps of Engineers to date. An additional storage for 300,000 ac. ft. has been authorized. The Corps have constructed 13 major multiple purpose reservoirs. Four P.L. 566 Watershed projects have been authorized on smaller drainage areas in the Valley. Lynx Hollow and Willakenzie have been completed, Lower Amazon-Flat Creek is under construction, and Grand Prairie has been approved for installation. The U. S. Geological Survey estimates that 500,000 ac. ft. of ground water would be available for use annually without depleting the basic underground storage.

Oregon State Statutes, ORS 536 and ORS 542, are the principal statutes setting up the legal restrictions and responsibilities in the use, management, and control of all waters in the State of Oregon.

AGRICULTURAL USE OF WATER RESOURCES

The early adjudication of rights to the use of available water by the State Engineer is an important prerequisite to the planning and implementation of water storage and distribution projects. The Bureau of Reclamation is working on preliminary plans for irrigation projects in the Valley, using stored water from constructed and proposed reservoirs. The Soil Conservation Service and local people are also planning or building distribution systems.

Industries use large quantities of water, but fortunately most of this water is reusable if handled properly. Studies on the utilization of reusable water are under way. Principal industries are in wood products, food processing, meat products and rare metals. To date, no shortage for existing industries has developed; however, availability of water and facilities for waste disposal are important considerations for future industries that may come into the Valley.

IRRIGATION POTENTIAL*

The potential for irrigation expansion in the Willamette Basin is surpassed by few areas in the nation. An abundant water supply of excellent quality, many acres of fertile land well suited for irrigation development, a favorable climate for production of a wide variety of irrigated crops, and a favorable economic and social environment are all conducive to the growth of irrigation. Also, some forest lands may be well suited to irrigation for increase of wood fiber crops. Planning work to develop these resources is continuously being done by the Soil Conservation Service, Bureau of Reclamation, and other public and private agencies. Potentially irrigable land remaining for development is limited in a broad sense by physical considerations, but urban expansion and other cultural factors are also pertinent.

An inventory of water areas in the Valley can be found in the Willamette Basin Comprehensive Study, 1969. On page 16 is the water in storage in the major Corps of Engineer reservoirs in the area. In addition, there are also a significant number of other lakes and impoundments located in the upper valley.

* Willamette Basin Comprehensive Study
Appendix F--Irrigation, page II-23.

WATER IN STORAGE

U. S. Army Corps of Engineers Projects

Upper Willamette RC&D Area

Project	Stream	Total Acre-feet 1/
* Fern Ridge	Long Tom River	116,200
* Cottage Grove	Coast Fork Willamette River	33,060
* Dorena	Row River	77,500
* Lookout Point	Middle Fork Willamette R.	456,000
Dexter (Rereg.)	Middle Fork Willamette R.	27,500
** Hills Creek	Middle Fork Willamette R.	356,000
** Cougar	South Fork McKenzie River	219,000
** Fall Creek	Fall Creek	125,000
** Green Peter	Middle Santiam River	430,000
** Foster	South Santiam River	61,000
** Blue River	Blue River	89,000
* Detroit	North Santiam River	455,000
Big Cliff (Rereg.)	North Santiam River	5,930
		2,451,190

In general, the flood control storage less that reserved for summer flow is available for irrigation. However, the Corps of Engineers does not allocate storage to irrigation.

*The Bureau of Reclamation filed with the State Engineer's office of Oregon for 835,000 acre-feet for irrigation water from these projects.

**The Bureau of Reclamation filed with the State Engineer's office of Oregon for 805,100 acre-feet for irrigation water from these projects.

1/ 1 acre-inch is 27,154 gallons or 3,630 cubic feet.
1 acre-foot is 325,851 gallons or 43,560 cubic feet.
1 cubic foot per second is 448.8 gallons per minute or 646,317 gallons per day.
1,000 acre-feet per year is 0.893 million gallons per day.

PRESENT & POTENTIAL IRRIGATED ACREAGE

Land Irrigated 1/

Sub Basin:

Coast Fork	3,470 ac.
Middle Fork	2,090
McKenzie	7,820
Long Tom	20,730
Santiam	54,810
Coast Range	10,000
Total	98,920 ac.

Land Suited for Irrigation 2/

Excellent Suitability	256,700 ac.
Good Suitability	339,500
Fair Suitability	222,900
Total	819,100 ac.
Present Irrigation	- 98,920
Available for New Irrigation	720,180 ac.

Approximate Acres of Land Available for New Irrigation 2/

Excellent Suitability	106,000 ac.
Good Suitability	325,000
Fair Suitability	210,180
Total	720,180 ac.

1/ 1969 Willamette Basin Comprehensive Study
2/ See maps in this report and State Water Resources Report, "Oregon's Long-Range Requirements for Water."

DISTRICT IMPROVEMENT COMPANIES

I = Irrigation
F = Flood Control
D = Drainage

County & District	Use	Acres	Filing Date
BENTON COUNTY:			
Centennial Island	F	1,429.43	1963
Foster	F	240	1958
Glen Ridge	D	13.1	1964
Lower Bend	F	404.6	1963
Polk-Benton	F	647.25	1939
Sam Daws	F	611.76	1962
LANE COUNTY:			
Central	F	173	1965
Fertile	F	3,559.45	1939
Finn Ranch	D	10.26	1966
Hart Location	F	250.24	1966
Hendricks Road	F	530.36	1966
Lane Co. #1	F	1,531.96	1937
Lane Co. #2	F	482.51	1937
Lane Co. #3	F	3,016	1956
Leaburg	F	94.63	1958
McKenzie River #1	F	481.78	1937
McKenzie River #2	F	1,274.10	1957
McKenzie River #2	F	760.18	1947
Mohawk	F	111.15	1961
North Bank-McKenzie	F	351.2	1962
Richardson Butte	I	63	1972
River Loop	F	159.62	1964
Tidewater Grange	D	4	1948
Tri-County	F	2,322	1958
Willamette-Alder Creek	F	1,411.9	1956
LINN COUNTY:			
Dumberk Lane		722.4	1964
Gibson Hill	D	52	1958
Golden Valley	I	600	1966
Liberty	F	408.3	1962
Linn Co. #3	F	1,100.1	1937
North Albany	D	356.1	1957
North Harrisburg	F	1,071.2	1965
Palestine Water	D	1,139.19	1960
Parker Oak Grove	D	103.5	1959
Queener	I	754	1962
Riverview	I	350	
Scio	I	490	1954
South Lebanon	F	31.5	1958

WATER CONTROL DISTRICTS

I = Irrigation
F = Flood Control
D = Drainage

County & District	Use	Acres
BENTON COUNTY		
LANE COUNTY:		
Amazon	F	
Blachly	F	3,920
Cloverdale	F I	4,700
Creswell	F	
Junction City - Lane	F I	46,000
Benton		5,440
Dearborn	F	45
Willamette-Natron	F	1,400
Coyote-Spencer	F I	15,200
LINN COUNTY:		
Beaver Creek	D F I	5,600
Dever-Conner	F	4,914
Linn County-Calapooia	F	358
Little Muddy Creek	F D I	33,860
North Lebanon	F	5,200
Grand Prairie	F I	32,600
Santiam - Linn	F I	16,000
Marion		28,000
South Santiam	F	862
Lebanon	F	1,200

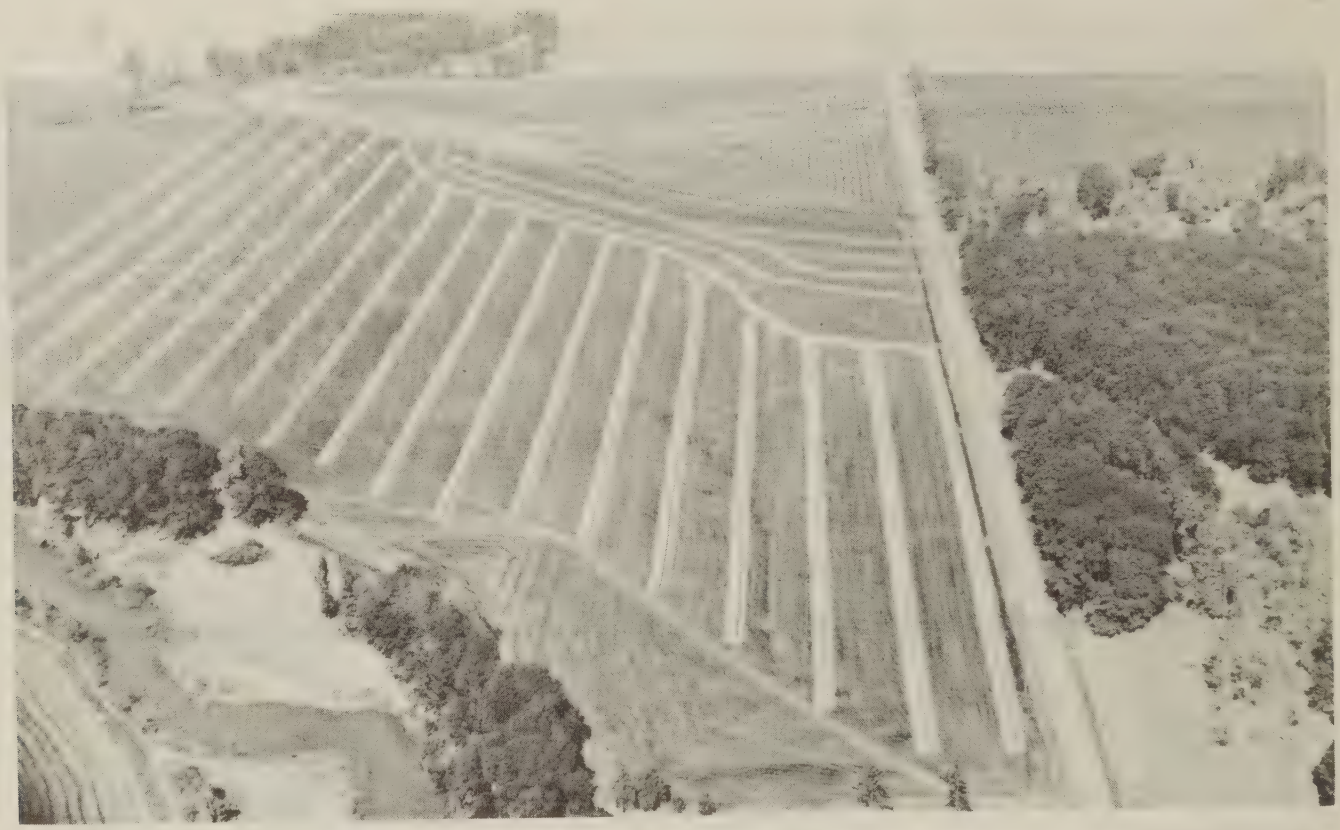
IRRIGATION DISTRICTS

County & District	No. of Farms	Acres	Origin Date
BENTON COUNTY			
LANE COUNTY			
LINN COUNTY:			
Calapooia	75	885	1954
Lacomb	97	1,712	1935
Muddy Creek (also Lane)	101	4,827	1939

OTHER WATER MANAGEMENT ORGANIZATIONS		
County & District	Use	Acres
BENTON COUNTY		
LANE COUNTY:		
Creswell Irrigation Assn.		
Cedar Creek Irrigation Assn.		
McKenzie Irrigation Assn.		
LINN COUNTY:		
Kingston Irrigation Cooperative Co.	I	431

SCS PHOTO 7-2009-13

Farm sprinkler system on corn crop, Lane County, Oregon.



SCS PHOTO 7-2275.

In 1967 Charles Curtis, Harrisburg, installed 30,000 ft. of tile. The improved drainage has resulted in conversion to more productive and better paying crops.

SCS PHOTO 7-2009-15

Strawberry crop harvesting in Lane County.

Land Resources

There are two general groups of soils in the valley. The first group was formed largely from parent materials derived from igneous rock and tuffaceous sandstone, siltstone, and shale. These soils have gentle to moderately steep slopes; they are moderately fine textured, and in most cases fairly deep over the underlying rock. They are generally well drained, and most of them are medium or strongly acid in reaction.

The second group--the most extensive and most important agronomically--is found in the lowland portions of the valley. These lowland soils cover broad nearly level areas, occasionally interrupted by intervening hills. They are formed from water-laid sediments of coarse to fine texture, with medium to fine the most common. Drainage ranges from poor to excessive. The soil varies from slightly to strongly acid in reaction. This large, contiguous expanse of smooth land characteristically has suitable soils and a favorable climate for a highly diversified agricultural economy.

IRRIGATION SUITABILITY MAPS

The maps included with this resource data show the location and extent of the important soil series and the dominant slopes. They were taken from those in the State Water Resources report, "Oregon's Long-Range Requirements for Water." They do not identify the soils or slope at any particular spot in the landscape. Detailed soil surveys made at scales of 4 to 8 inches per mile are customarily used for this purpose and are maintained at the Soil Conservation Service offices in the area.

The small map scale precludes the separation of many smaller areas having obvious topographic and soil differences. Also, the reconnaissance survey of the forest lands and unmapped portions of the lowlands was made on the basis of relatively few soil observations compared to a detailed soil survey, and much more reliance is placed on landforms, photo interpretations, vegetative changes, and other easily observable features for placement of soil boundaries. For these reasons, the maps in this report are not suitable for detailed planning or development of an area. However, they are most useful for learning about the general nature of the soils in a particular area, for comparing soils of one area with those of another area, and for noting presently irrigated lands.

The map symbol in each delineated area identifies the soil series in order of dominance and the dominant slope range within that area as indicated in the identification legend on the map. The maps are colored to show five classes of relative suitability for irrigation based on the major series or phase in each delineation. This is an interpretive grouping that is pertinent for Oregon's Long range water needs study and, disregarding climate, corresponds closely with the general agricultural suitability of the soils. However, like all interpretations for use and management, it may become outdated with changes in technology, and it cannot be stretched to serve a wide range of interests.

In summary, the maps will serve as a tool for general planning and educational purposes. The maps are not designed or intended to substitute for detailed soil surveys which are required for planning at the farm or individual field level. The relation of soil characteristics to degrees of limitation is based on present-day, advanced irrigation technology with emphasis on the sprinkler application of water. It is important to note that only soil or land characteristics are considered. A full evaluation of irrigation feasibility for any area requires consideration of climatic, engineering and economic factors as well.

SOIL SUITABILITY GROUPS FOR IRRIGATION

The following soils are grouped according to suitability for irrigation and the nature of the main soil limitations for irrigation are indicated, and the acreage in each county is shown. Group I, II, and III are excellent, good and fair for irrigation, respectively, while Group IV and V are poor and very poor for irrigation. The mapping symbols and names indicated are those on the maps of irrigation suitability.

	Benton	Linn	Lane	Total
GROUP I. EXCELLENT IRRIGATION SUITABILITY; NO SERIOUS LIMITATIONS.				
A. Deep nearly level, well drained soils:				
Ab . . . Abiqua	3,400	2,600	14,200	
Ch . . . Chehalis	9,400	16,300	8,500	
Kp . . . Knappa	1,500	---	---	
Mn . . . Malabon	5,500	8,800	36,000	
Sa . . . Salem	---	14,100	13,000	
Wl . . . Willamette, 0-3% slopes	1,200	6,000	---	
TOTAL	21,000	47,800	71,700	140,500
B. Deep nearly level soils needing drainage:				
Am . . . Amity, 0-3% slopes	12,500	51,700	---	
Ma . . . McBee	3,400	10,200	2,200	
Wo . . . Woodburn, 0-3% slopes	14,900	21,300	---	
TOTAL	30,800	83,200	2,200	116,200
GROUP II. GOOD IRRIGATION SUITABILITY.				
A. Mostly deep soils limited by slope or slope and permeability:				
Am/B . . Amity, 3-7% slopes	100	---	---	
Jo/B . . Jory, 3-7% slopes	800	2,400	---	

	Benton	Linn	Lane	Total
Ne/B . . Nekia, 3-7% slopes	1,200	---	---	
Sk/B . . Salkum, 2-7% slopes	400	5,800	3,700	
Wo/B . . Woodburn, 3-7% slopes	1,200	---	---	
TOTAL	3,700	8,200	3,700	15,600
B. Deep soils limited mainly by permeability and wetness:				
Am . . . Amity(assoc. with Dayton)	12,500	51,700	---	
Cw . . . Chitwood	1,300	---	---	
Cl . . . Clackamas	---	14,400	9,400	
Cb . . . Coburg	3,200	7,200	21,000	
Ho . . . Holcomb	700	20,100	2,600	
Mp . . . McAlpin	2,000	1,700	15,500	
Ns . . . Nestucca	1,000	---	---	
Ve/A,B . Veneta, 0-7% slopes	---	---	20,500	
Wp . . . Wapato	10,400	22,400	2,000	
TOTAL	31,100	117,500	71,000	219,600
C. Deep, nearly level soils limited mainly by flood hazard:				
Cq . . . Cloquato	10,800	26,300	11,800	
Nh . . . Nehalem	2,600	---	---	
Nb . . . Newberg	9,100	16,300	23,800	
TOTAL	22,500	42,600	35,600	100,700
D. Deep soils limited mainly by gravelly or sandy texture:				
Bd/A,B . Briedwell, 0-7% slopes	1,000	2,600	---	
TOTAL	1,000	2,600	---	3,600
GROUP III. FAIR IRRIGATION SUITABILITY.				
A. Moderately deep to deep soils limited mainly by slope or slope and permeability:				
Bf/C . . Bellpine, 7-12% slopes	6,600	---	6,000	
Fg/C . . Firgrell, 7-12% slopes	4,500	---	---	
Ha/C . . Hazelair, 7-12% slopes	400	2,500	1,800	
Jo/C . . Jory, 7-12% slopes	---	6,800	1,200	
Mc/C . . McCully, 7-12% slopes	---	3,700	---	
Ne/C . . Nekia, 7-12% slopes	---	5,000	---	
Sk/C . . Salkum, 7-12% slopes	---	2,000	3,300	

	Benton	Linn	Lane	Total
St/C . . Steiwer, 7-12% slopes	4,200	3,800	1,200	
Ve/C . . Veneta, 7-12% slopes	1,800	---	---	
Wk/C . . Willakenzie, 7-12% slopes	400	7,900	1,200	
TOTAL	17,900	31,700	14,700	64,300
B. Nearly level or gently sloping soils limited mainly by permeability and wetness:				
Ay . . . Awbrey(now named Dayton)	2,200	4,500	14,000	
Bn . . . Brenner	2,500	---	---	
Co . . . Concord	---	4,600	600	
Cs . . . Conser	---	7,200	6,000	
Da . . . Dayton	11,000	42,100	1,200	
Ds . . . Dayton, gravelly substratum	---	4,400	---	
Ha/B . . Hazelair, 3-7% slopes	700	5,600	2,500	
Ho . . . Holcomb(assoc. with Dayton)	700	20,100	2,600	
Li . . . Linslaw	---	---	4,800	
Sn/B . . Santiam, 2-7% slopes	---	2,000	---	
Wa . . . Waldo	2,600	3,700	11,600	
TOTAL	19,700	94,200	43,300	157,200
C. Nearly level to gently sloping soils limited by mainly gravelly texture:				
Sf . . . Sifton	---	400	1,000	
TOTAL	---	400	1,000	1,400
GROUP IV. POOR IRRIGATION SUITABILITY.				
A. Deep and moderately deep soils limited mainly by slope:				
Ap/D . . Apt, 12-20% slopes	1,400	---	---	
Bf/D . . Bellpine, 12-20% slopes	9,000	---	12,000	
Di/D . . Dixonville, 12-20% slopes	800	---	---	
Fg/D . .*Firgrell, 12-20% slopes	2,300	---	---	
Ha/D . . Hazelair, 12-20% slopes	2,400	800	4,700	
Hg/D . . Honeygrove, 12-20% slopes	2,400	4,900	600	
Jo/D . . Jory, 12-20% slopes	800	5,800	6,500	
Mc/D . . McCully, 12-20% slopes	---	600	---	
Ne/D . . Nekia, 12-20% slopes	2,600	1,100	6,700	
Pe/D . . Peavine, 12-20% slopes	---	3,300	1,400	
St/D . . Steiwer, 12-20% slopes	4,400	2,200	600	
Wk/D . . Willakenzie, 12-20% slopes	---	3,100	200	
TOTAL	26,100	21,800	32,700	80,600

*Name changed to Veneta.

	Benton	Linn	Lane	Total
B. Soils limited mainly by clayey texture and wetness:				
Ba . . . Bashaw	3,200	12,200	19,700	
Ct . . . Courtney	---	8,800	6,500	
Dt . . . Dayton, thick subsoil	2,200	16,600	8,100	
Pa/B,C . Panther, 3-12% slopes	---	---	3,000	
TOTAL	5,400	37,600	37,300	80,300
C. Shallow soils limited by depth to gravel or bedrock:				
Ca . . . Camas	2,500	9,800	18,000	
St/C,D . Chehulpum, 7-20% slopes	4,400	2,200	600	
Ph/C,D . Philomath, 7-20% slopes	6,000	---	9,400	
Sy/B,C,D Stayton, 3-20% slopes	---	4,800	---	
TOTAL	12,900	16,800	28,000	57,700
GROUP V. SOILS VERY POOR AND UNSUITED FOR IRRIGATION.				
A. Mostly forested soils limited mainly by slope or slope and stones:				
Ap/E . . Apt, 20-60% slopes	18,200	---	---	
Bf/E . . Bellpine, 20-60% slopes	12,000	---	46,000	
Bh/E . . Bohannon-Digger, 20-60% slopes	13,900	---	15,000	
Ck/E . . (Ck), 20-60% slopes	---	5,100	---	
Cu/E . . Cruiser, 20-60% slopes	---	3,300	100	
Di/E . . Dixonville, 20-60% slopes	9,200	3,000	4,000	
Fg/E . .*Firgrell, 20-60% slopes	300	---	---	
He/E,F . Hembre, 20-90% slopes	3,000	13,100	---	
Hg/E . . Honeygrove, 20-60% slopes	14,600	50,300	96,200	
Jo/E . . Jory, 20-60% slopes	9,100	38,000	55,700	
Ki/D,E,F Kinney, 12-90% slopes	---	56,000	29,900	
Mt/E . . Marty, 20-60% slopes	6,000	800	---	
Mc/E . . McCully, 20-60% slopes	---	61,900	32,100	
Ne/E . . Nekia-Price, 20-60% slopes	27,500	27,300	57,800	
Pe/E . . Peavine, 20-60% slopes	19,500	55,900	153,000	
Pc/E . . Preacher-Slickrock, 20-60%	5,800	---	---	
St/E . . Steiwer-Chehulpum, 20-60%	1,300	3,200	2,000	
Wk/E . . Willakenzie, 20-60% slopes	---	7,500	1,000	
TOTAL	140,400	325,400	492,800	958,600

*Name changed to Veneta.

	Benton	Linn	Lane	Total
B. Soils limited by stoniness, very steep slopes, shallow depth, cold temperatures, or two or more of these in combination:				
Af/E,F . Aschoff, 20-90% slopes	---	400	---	
Gl/E,F . Goodlow, 20-90% slopes	---	10,400	600	
Hl/E,F . Henline, 20-90% slopes	---	10,700	3,500	
Kl/E,F . Klickitat-Kilchis, 20-90% slopes	6,000	111,400	160,000	
Ph/E,F . Philomath, 20-90% slopes	2,600	16,400	23,000	
Wz/D,E,F Witzel-Ritner, 12-90% slopes	12,600	31,900	27,400	
TOTAL	21,200	181,200	214,500	416,900

AREA SOILS AND THEIR INTERPRETATIONS

Soils information is basic for planning and development. In addition to the maps referred to in this resource data which show the irrigated land, this section contains a representative Soils Interpretation Form (OR-Soils-1) for each irrigation suitability group.

The OR-Soils-1's were made to provide comprehensive information about a soil in as brief a manner as possible. They have been designed to be used by persons with varying degrees of knowledge and interest in soils. The information in these forms, in conjunction with a soil map, can be used as a guide to determine soil limitations that need to be recognized as an area is considered for a particular use. Each OR-1 is divided into several sections--brief narrative description; engineering; community, recreation, agricultural and woodland interpretations. This report is primarily interested in the Agricultural Interpretations.

The Agricultural Interpretations consider the use of land primarily with respect to the commercial production of agricultural crops. Each suitability rating was made with regard to a specific crop and assumes good management practices and climatic adaptability of the crop to the area. The soil is rated for major crops commonly grown on that soil. Where special practices are necessary, such as irrigation or drainage, it is noted. From the crops rated, it is possible to make inferences regarding the suitability of other crops for that particular soil. The major soil factors affecting use are given along with the suitability for each major crop rated. OR-Soils-1's for most soils in the valley are available at the Soil Conservation Service offices.

Following is a listing of the representative Soils Interpretation Forms (OR-Soils-1), for each irrigation suitability group mentioned in this section under "Soil Suitability Groups for Irrigation," included in this resource data:

Group I - A	Malabon	Group III - A	Bellpine	Group IV - C	Camas
I - B	Amity	III - B	Dayton	V - A	Jory
II - A	Salkum	III - C	Sifton	V - B	Klickitat-Kilchis
II - B	Coburg	IV - A	Bellpine		
II - C	Cloquato	IV - B	Bashaw		

SOIL INTERPRETATIONS

State: Oregon Date: June 1969 Soils: MALABON silty clay loam

SUBJECT TO UPDATING

Malabon soils consist of well drained, fine textured soils formed from silty and clayey mixed alluvium. They occupy nearly level, broad stream terraces. Where not cultivated, the vegetation consists of Douglas-fir, oak, blackberry, poison oak, and other shrubs and grasses. Elevations range from 200 to 500 feet. The mean annual precipitation is 40 to 50 inches; mean annual air temperature is 52-54°F.; and the frost-free season is 190 to 212 days. These soils are associated with Salem, Coburg and Awbrey soils.

The surface layer is very dark grayish brown silty clay loam 13 to 18 inches thick. The subsoil is dark brown silty clay loam to silty clay 26 to 42 inches thick. The substratum is dark brown to brown silty clay loam to loam and commonly stratified with sand and gravel.

This soil is usually quite uniform throughout but may contain up to 35% gravel. Included are small areas of the similar but gravelly Salem soils, the similar but moderately well drained Coburg soils and the poorly drained Awbrey soils.

The permeability of this soil is moderately slow. The surface runoff is slow and the erosion hazard is slight. Total available water holding capacity is high. The natural fertility is high and the workability is good.

This soil is used mainly for production of small grains, orchards, grass seed, pasture, and irrigated vegetable crops.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve				Permeability	Available Water Capacity	Soil Reaction	Shrink Swell Potential	Corrosivity
	USDA Texture	Unified	AASHO	#4	#10	#40	#200	Inches Per Hour	Inches per Inch of Soil	(pH)		Uncoated Steel
0-13"	Silty clay loam	CL	A-7	100	90-100	85-100	70-90	0.63-2.00	.18-.20	5.6-6.0	Moderate	High
13-28"	Silty clay	CL*	A-7-6*	100*	95-100*	95-100	90-95*	0.20-0.63	.18-.20	6.1-6.5	Moderate	
28-58"	Silty clay loam	CL	A-7	100	85-100	80-100	70-90	0.63-2.00	.18-.20	6.1-6.5	Moderate	

* Based on engineering tests.

Suitability as a source of topsoil is good to 12". Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair to good.
Hydrologic group is B. Suitability for irrigation is good.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location		Moderate	Mod. slow permeability; moderate shrink-swell potential; plastic soil material.
Dikes & Levees Pond Embankment		Slight	Slow compacted permeability; moderate shrink-swell potential; fair to good stability; good resistance to piping.
Pond Reservoir Area		Slight	Mod. slow permeability; gravel occurs below 3½ to 7 feet.
Agricultural Drainage		Well drained	Moderately slow permeability.
Terraces & Diversions		N/A	Nearly level.
Grassed Waterways		N/A	Well drained.
Winter Grading		Moderate	Silty clay loam surface soil.

URBAN OR COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings		Moderate	Low shear strength; mod. shrink-swell poten.; med. to high compress.; mod.slow permea.
Septic tank sewage disposal		Severe	Moderately slow permeability.
Lagoon sewage disposal		Slight	Mod. slow permeability; slow compacted permea.; gravel occurs below 3½ to 7 ft.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds		Moderate	Silty clay loam surface soil; mod. slow permeability.
Camp Areas		Moderate	Silty clay loam surface soil; mod. slow permeability.
Picnic Areas		Moderate	Silty clay loam surface soil.
Paths & Trails		Moderate	Silty clay loam surface soil.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Yields	Major Factors Affecting Use
Winter Wheat (non-irrigated)		Good	50 bu/ac	Mod. slow permea.; high water holding cap.; good workability;
Spring Barley (non-irrigated)		Good	60 bu/ac	plow pan easily formed. SAME AS ABOVE.
Blackberries (non-irrigated)		Good	4 tons/ac	SAME AS ABOVE.
Sweet Cherries (non-irrigated)		Good	3 tons/ac	SAME AS ABOVE.
Filberts (non-irrigated		Good	0.8 tons/ac	SAME AS ABOVE.
Alfalfa Hay (non-irrigated)		Good	6 tons/ac	SAME AS ABOVE.
Pole Beans (irrigated)		Good	8 tons/ac	Mod. slow permea.; high water hold.cap.; highly compactable
Sweet Corn (irrigated)		Good	6 tons/ac	when wet. SAME AS ABOVE.
Strawberries (irrigated)		Good	4 tons/ac	SAME AS ABOVE.
Land capability: IIs				

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas-fir			Moderate	Slight	Slight	Moderate	Moderate	Douglas fir

RANGE INTERPRETATIONS

Site Name	Soil	Key Plants	Yields		Major Factors Affecting Use
			Total	Usable	

SOIL INTERPRETATIONS

State: Oregon
Date: July 1969

Soils: 1. Amity silt loam, 0-3% slopes
2. Amity silty clay loam, fine subsoil variant, 0-3% slopes.
3. Amity silt loam, coarse subsoil variant, 0-3% slopes.

The Amity Series consists of a somewhat poorly drained silt loam over silty clay loam formed in mixed old alluvium. It is on broad valley terraces with smooth nearly level topography. When not cultivated, vegetation consists of grasses, rose bush and scattered oak. Elevation ranges from 150 to 200 feet. The mean annual precipitation is 40 to 50 inches; the mean annual air temperature is 52° to 54°F.; and the frost-free period is 165 to 210 days. The Amity soil is associated with the Concord, Woodburn, Willamette, Aloha, and Dayton soils.

The surface layer is a very dark grayish brown silt loam about 16 inches thick. The subsurface layer is dark gray silt loam about 6 inches thick. The upper subsoil is grayish brown, faintly mottled silty clay loam about 6 inches thick. The lower subsoil is light olive brown, distinctly mottled, silty clay loam, about 7 inches thick. It is underlain by olive brown, silty clay loam or silt loam several feet thick.

Unit 2 differs from #1 by having silty clay textures in the lower subsoil. Unit 3 differs from #1 by having weakly cemented sandy loam to gravelly sand below 30 inches.

Amity soil has moderately slow permeability. Roots can penetrate to over 60 inches. The available waterholding capacity is 9 to 12 inches. Surface runoff is slow, and a slight sheet erosion hazard may occur during heavy rains. Fertility is moderate and the workability is good, but cultivation is restricted by a high water table during winter and early spring.

Vegetable crops, small grain, grass seed, hay, and pasture are important crops. Other uses include wildlife and recreation.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve					Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200					
0-22"	Silt loam	ML*	A-4*	0	100	100	95-100	90-95	.63-2.0	.19-.21	5.6-6.0	Low	High
22-35"	Silty clay loam	ML-CL*	A-7-6*	0	100	100	95-100	95-100	0.2-.63	.19-.21	6.1-6.5	Low	High
35-60"	Silt loam	ML-CL*	A-4*	0	100	100	95-100	90-95	.63-2.0	.19-.21	6.1-6.5	Low	High

*Based on laboratory data

Suitability as a source of topsoil is good. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is poor.
Hydrologic group is C.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1, 2, 3	Moderate	Moderately slow permeability; water table 10-20" below surface; mod. shrink-swell potential.
Dikes & Levees	2	Slight	Nearly impervious compacted permeability; low stability; mod. shrink-swell potential.
Pond Embankment	1, 3	Moderate	Pervious substrata in units 1 and 3.
Pond Reservoir Area	3	Moderate	Moderately slow permeability; see soil limitations for Pond Embankment. Unit 3 has weakly cemented sandy loam below 30"
	1, 2	Slight	
Agricultural Drainage	1, 2, 3	Moderate	Moderately slow permeability; high water table 10-20" below the surface.
Terraces & Diversions	1, 2, 3	---	NOT APPLICABLE
Grassed Waterways	1, 2, 3	Moderate	High water table 10-20" below the surface; establishment of grasses easy; high waterholding capacity.
Winter Grading	1, 2, 3	Severe	High water table 10-20" below the surface; moisture content too high for good compaction, or excavation.

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1, 2	Severe	Low shear strength; mod. shrink-swell potential; seasonal water table 10-20" below the surface.
	3	Moderate	Unit 3 has weakly cemented sandy material below 30 inches.
Septic tank sewage disposal	1, 2, 3	Severe	Moderately slow permeability; seasonal water table 10-20" below the surface.
Lagoon sewage disposal	3	Moderate	Moderately slow permeability; see soil limitations for Pond Embankment.
	1, 2	Slight	Unit 3 has weakly cemented sandy material below 30".

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1, 2, 3	Moderate	Water table at 10-20" during winter and spring; somewhat poorly drained; moderately slow permeability.
Camp Areas	1, 2, 3	Moderate	SAME AS ABOVE.
Picnic Areas	1, 2, 3	Moderate	Somewhat poorly drained.
Paths & Trails	1, 2, 3	Moderate	Somewhat poorly drained.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Winter Wheat (non-irrigated)	1, 2, 3	Good	+60 bu/ac	Moderately slow permeability; seasonal water table 10-20" below surface; water-holding capacity high.
Red Clover (non-irrigated)	1, 2, 3	Poor	200-300 #/ac	SAME AS ABOVE.
Walnuts (non-irrigated)	1, 2, 3	Poor	500-800 #/ac	SAME AS ABOVE.
Spring Barley (non-irrigated)	1, 2, 3	Good	+60 bu/ac	SAME AS ABOVE.
Strawberries (irrigated)	1, 2, 3	Fair	3-5 Tons/ac	SAME AS ABOVE.
Blackberries (irrigated)	1, 2, 3	Fair	3-5 Tons/ac	SAME AS ABOVE.
Pole Beans (irrigated)	1, 2, 3	Good	+9 Tons/ac	SAME AS ABOVE.
Sweet Corn (irrigated)	1, 2, 3	Good	5-7 Tons/ac	SAME AS ABOVE.
Pasture (irr.)	1, 2, 3	Good	+13 AUM	SAME AS ABOVE.
Land Capability	IIw			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas-fir		III	Slight	Slight	Moderate	Severe	Moderate	oak

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing
		NOT APPLICABLE				

SOIL INTERPRETATIONS

State: Oregon Date: 12/69 Soils: 1. Salkum silty clay loam, 2-8% slopes
2. Salkum silty clay loam, 8-16% slopes

Salkum soils consist of well drained, silty clay loam over silty clay soils formed from mixed older alluvium. They occur on 2 to 16%, deeply weathered stream terraces. The native vegetation consists of Douglas fir, oak, rose, blackberries, poison oak, and grasses. Elevations range from 500 to 1000 feet. The mean annual precipitation is 40 to 60 inches; mean annual air temperature is 52 to 54°F.; and the frost-free period is 165 to 210 days. These soils are associated with Hazelair, Veneta, and Alvadore soils.

The surface layer is dark brown, silty clay loam 9 to 15 inches thick. The subsoil is reddish brown, silty clay or clay 25 to 35 inches thick. The substratum is variegated reddish brown clay with about 40% deeply weathered gravel.

Unit 2 is the same as Unit 1 except it occurs on steeper slopes. Included are small areas of moderately well drained, clay pan Hazelair soils and the similar Veneta and Alvadore soils. Depth to weathered gravel ranges from 30 to 50".

The permeability of this soil is slow. The surface runoff is slow, and the erosion hazard is slight on the gentle slopes. As the slopes increase in steepness, the runoff is medium and the erosion hazard is moderate. Total available water holding capacity is 8 to 10 inches. The natural fertility is low, and the workability is fair.

This soil is used mainly for hay, pasture, small grain and orchard production. Other uses include wildlife, recreation, homesites, and woodland.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification				% of Material Passing Sieve				Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200					
0-15"	Silty clay loam	CL	A-7	0-2	100	95-100	85-100	85-95	.63-2.0	.19-.21	5.6-6.0	Low to moderate	High
28-50"	Silty clay or clay	MH	A-7	0-5	100	95-100	95-100	90-95	.06-.20	.1[illegible]-.17	5.1 5.5	Low to moderate	High

Suitability as a source of topsoil is fair. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair.
Hydrologic group is C.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1,2	Slight	Low to moderate shrink-swell potential; slow permeability; weathered gravel at 30-50"; low shear strength.
Dikes & Levees Pond Embankment	1,2	Moderate	Low compacted permeability; low to moderate shrink-swell potential; gravel at 30-50".
Pond Reservoir Area	1. 2.	Slight Slight-mod.	Slow permeability; 2-16% slopes; weathered gravel at 30-50".
Agricultural Drainage	1,2	Not applicable	Well drained.
Terraces & Diversions	1. 2.	Slight Slight-mod.	Fair workability; slow permeability; 2-16% slopes.
Grassed Waterways	1. 2.	Slight Moderate	Low fertility; moderate resistance to erosion; fairly easy to establish vegetation.
Winter Grading	1,2	Severe	Silty clay loam surface soil; well drained; 2-16% slopes.

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1. 2.	Slight Slight-mod.	Low to moderate shrink-swell potential; low shear strength; 2-16% slopes
Septic tank sewage disposal	1,2	Severe	Well drained; slow permeability.
Lagoon sewage disposal	1. 2.	Moderate Severe	Low compacted permeability; low to moderate shrink-swell potential; 2-16% slopes; gravel at 30-50".

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1. 2.	Moderate Severe	Silty clay loam surface soil; 2-16% slopes; slow permeability.
Camp Areas	1,2	Moderate	SAME AS ABOVE
Picnic Areas	1,2	Moderate	Silty clay loam surface soil; 2-16% slopes
Paths & Trails	1,2	Moderate	Silty clay loam surface soil.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Pole Beans (irrigated)	1,2	Good	6-8 tons/ac.	Slow permeability; 2-16% slopes; good workability
Sweet Corn (irrigated)	1,2	Good	4-6 tons/ac.	SAME AS ABOVE
Strawberries (irrigated)	1,2	Good	4 tons/ac.	SAME AS ABOVE
Pasture (irrigated)	1,2	Good	12-16 AUM's	SAME AS ABOVE
Winter Wheat (non-irrigated)	1,2	Good	40-60 bu/ac.	Well drained; moderate erosion hazard; 2-16% slopes.
Spring Barley (non-irrigated)	1,2	Good	40-60 bu/ac.	SAME AS ABOVE
Filberts (non-irrigated)	1,2	Good	.6-.8 tons/ac.	Gravel at 30-50"; good workability.
Sweet Cherries (non-irrigated)	1,2	Good	3 tons/ac.	SAME AS ABOVE
Land Capability	1. IIe 2. IIIe			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas fir	1, 2	139	Moderate	Slight	Slight	Moderate	Moderate	Douglas fir

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing

SOIL INTERPRETATIONS

State: Oregon Date: June 1969 Soils: COBURG silty clay loam

SUBJECT TO UPDATING

Coburg soils consist of moderately well drained, fine textured soils formed from silty and clayey alluvium. They occupy nearly level low stream terraces. Where not cultivated, the vegetation consists of Douglas-fir, oak, blackberry, poison oak, and other shrubs and grasses. Elevations range from 200 to 500 feet. The mean annual precipitation is 40 to 50 inches; mean annual air temperature is 52-54°F.; and the frost-free season is 190 to 212 days. These soils are associated with Malabon, Awbrey and Conser soils.

The surface layer is very dark grayish brown silty clay loam, 12 to 18 inches thick. The subsoil is dark brown, mottled silty clay loam, 28 to 48 inches thick. The substratum is dark brown, mottled silty clay loam to fine sandy loam, and is commonly stratified with sand and gravel.

This soil may range to somewhat poorly drained and contain up to 35% gravel. Included are small areas of the similar but poorly drained Conser soils, the well drained, gravelly Salem soils, the similar but well drained Malabon soils and the clayey, poorly drained Awbrey soils.

The permeability of this soil is moderately slow. The surface runoff is slow and the erosion hazard is slight. Total available waterholding capacity is high. The natural fertility is high and the workability is good.

This soil is used mainly for production of small grains, grass seed, orchards, pasture and irrigated vegetable crops.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve				Permeability	Available Water Capacity	Soil Reaction	Shrink Swell Potential	Corrosivity
	USDA Texture	Unified	AASHO	#4	#10	#40	#200	Inches Per Hour	Inches per Inch of Soil	(pH)		Uncoated Steel
0-18"	Silty clay loam	CL	A-7	100	95-100	95-100	80-95	.63-2.00	.18-.20	5.6-6.0	Moderate	
18-41"	Silty clay loam	CL*	A-7-6*	100	95-100*	95-100	80-95*	.20-.63	.18-.20	6.1-6.5	Moderate	High
		*Based on Engineering tests										
41"+	Silty clay lm.	CL	A-7	100	95-100	90-100	80-95	.63-2.00	.18-.20	6.6-7.3	Moderate	

Suitability as a source of topsoil is good to 12". Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair to poor.
Hydrologic group is B. Suitability for irrigation is good.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location		Moderate	Moderately slow permeability; mod. shrink swell potential; fair to good stability; seasonal water table at 16-30".
Dikes & Levees Pond Embankment		Slight	Slow compacted permeability; mod. shrink-swell potential; good resistance to piping.
Pond Reservoir Area		Slight	Moderately slow permeability; seasonal water table at 16-30"; gravel occurs below 3½ to 7 feet.
Agricultural Drainage		Slight	Moderately slow permeability; moderately well drained; seasonal water table at 16-30".
Terraces & Diversions		N/A	Nearly level.
Grassed Waterways		N/A	Moderate resistance to erosion; high water holding capacity; establishment of vegetation is easy.
Winter Grading		Moderate	Silty clay loam surface soil; mod. well drained; seasonal water table at 16-30".

URBAN OR COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings		Moderate	Low shear strength; moderate shrink-swell poten.; seasonal water table at 16-30".
Septic tank sewage disposal		Severe	Mod. slow permeability; seasonal water table at 16-30".
Lagoon sewage disposal		Slight	Same as above; slow compacted permeability; gravel below 3½ to 7 feet.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds		Moderate	Silty clay loam surface soil; seasonal water table at 16-30"; mod.slow permea.
Camp Areas		Moderate	SAME AS ABOVE.
Picnic Areas		Moderate	Silty clay loam surface soil; seasonal water table at 16-30".
Paths & Trails		Moderate	SAME AS ABOVE.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Yields	Major Factors Affecting Use
Winter Wheat (non-irrigated)		Fair to good*	45 bu/ac	High moisture supplying capacity; seasonal water table at 16-30".
Spring Barley (non-irrigated)		Good	50 bu/ac	SAME AS ABOVE. Good workability.
Blackberries (non-irrigated)		Good	4 tons/ac	SAME AS ABOVE.
Sweet Cherries (non-irrigated)		Good	3 tons/ac	High moisture supplying capacity; rooting depth over 40".
Filberts (non-irrigated)		Good	0.8 tons/ac	SAME AS ABOVE.
Alfalfa Hay (non-irrigated)		Fair to good*	5 tons/ac	Seasonal water table at 16-30"; high water holding capacity.
Pole Beans (irrigated)		Good	8 tons/ac	Mod. slow permeability; seasonal water table at 16-30"; highly compactible under irrigation.
Sweet Corn (irrigated)		Good	6 tons/ac	SAME AS ABOVE.
Strawberries (irrigated)		Fair to good*	4 tons/ac	SAME AS ABOVE.
Land capability: IIw		* drained		

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	

RANGE INTERPRETATIONS

Site Name	Soil	Key Plants	Yields		Major Factors Affecting Use
			Total	Usable	

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Rev. 8-4-69
(File Code SOILS 12)

U. S. Department of Agriculture
Soil Conservation Service

SOIL INTERPRETATIONS

State: Oregon Date: 2/10/70 Soils: 1. Cloquato silt loam, 0-3% slopes

Cloquato soils consist of well drained silt loam soils formed from recent alluvium. They occupy nearly level to gently undulating bottomlands. Where not cultivated, the vegetation consists of Douglas-fir, cottonwood, maple, oak, blackberry, shrubs, and grasses. Elevations range from 30 to 650 feet. The mean annual precipitation is 40 to 60 inches; mean annual air temperature is 52° to 54°F.; and the frost-free period is 165 to 210 days. These soils are associated with Newberg and Chehalis soils.

The surface layer is dark brown silt loam 14 inches thick. The subsoil is dark brown silt loam 36 inches thick. The substratum is brown, stratified silt loam to very fine sandy loam. Sand and gravel may occur below 40 inches.

This soil is usually quite uniform throughout, but it may be stratified with fine sand and 10 to 15 percent pebbles may occur in some areas. Included are small areas of silty clay loam Chehalis soils, sandy loam Newberg soils, and shallow, gravelly Camas soils.

The permeability is moderate. The surface runoff is slow and the erosion hazard is moderate due to overflow. Total available waterholding capacity is 9 to14 inches. The soil is subject to occasional flooding. Workability is good.

This soil is used mainly for small grains, hay, orchards, or irrigated for beans, corn, mint, berries and other row crops. Other uses include wildlife and recreation.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification				% of Material Passing Sieve				Permeability	Available Water Capacity	Soil Reaction	Shrink Swell Potential	Corrosivity
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200	Inches Per Hour	Inches per Inch of Soil	(pH)		Uncoated Steel
0-50"	Silt Loam	ML	A-4	0	100	90-100	90-100	70-90	0.63-2.0	.20-.23*	5.6-6.5	Low	Low

*Based on laboratory data.

Suitability as a source of topsoil is good. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair to good.
Hydrologic group is B.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1	Severe	Moderate permeability; low shrink-swell potential; poor stability; subject to overflow.
Dikes & Levees Pond Embankment	1	Moderate	Poor stability; low compacted permeability; low shrink-swell potential; poor resistance to piping.
Pond Reservoir Area	1	Moderate	Moderate permeability; gravel or sandy strata may occur below 40 inches.
Agricultural Drainage	1	---	Not needed; well drained.
Terraces & Diversions	1	---	Not needed; nearly level.
Grassed Waterways	1	Moderate	Low resistance to erosion; easy to establish vegetation.
Winter Grading	1	Moderate	Moderate trafficability; soil fairly difficult to excavate when wet; subject to flooding.

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1	Severe	Subject to flooding.
Septic tank sewage disposal	1	Severe	Subject to flooding.
Lagoon sewage disposal	1	Severe	Subject to flooding; moderate permeability.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1	Severe	Subject to flooding.
Camp Areas	1	Severe	Subject to flooding.
Picnic Areas	1	Moderate	Subject to flooding.
Paths & Trails	1	Slight	Subject to flooding.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Winter Wheat (non-irrigated)	1	Fair to Good*	50 bu/ac.	Subject to flooding; high waterholding capacity; good workability; rooting depth over 40"; subject to compaction.
Spring Barley (non-irrigated)	1	Good	60 bu/ac.	SAME AS ABOVE.
Blackberries (non-irrigated)	1	Good	3.5 tons/ac.	SAME AS ABOVE.
Sweet Cherries (non-irrigated)	1	Good	3 tons/ac.	SAME AS ABOVE.
Filberts (non-irrigated)	1	Good	0.8 tons/ac.	SAME AS ABOVE.
Alfalfa Hay (non-irrigated)	1	Good	5 tons/ac.	SAME AS ABOVE.
Pole Beans (irrigated)	1	Good	9 tons/ac.	SAME AS ABOVE.
Sweet Corn (irrigated)	1	Good	7 tons/ac.	SAME AS ABOVE.
Strawberries(irr.)	1	Fair-Good*	6 tons/ac.	SAME AS ABOVE
Land Capability	IIw	*Where protected from flooding.		

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas-fir	1	Site Class II	Slight	Slight	Slight	Severe	Moderate	Oregon ash cottonwood maple Doug.fir
Very little commercial timber is grown on this soil.								

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing
		NOT APPLICABLE				

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U. S. Department of Agriculture
Soil Conservation Service

SOIL INTERPRETATIONS

State: Oregon Date: 12/69

Soils:
1. Bellpine silty clay loam, 3-12% slopes
2. Bellpine silty clay loam, 12-20% slopes
3. Bellpine silty clay loam 20-30% slopes
4. Bellpine silty clay loam 30-60% slopes
5. Bellpine cobbly silty clay loam, 2-30% slopes

Bellpine soils consist of well drained, silty clay loam over clay soils formed from sedimentary colluvium and bedrock. They occur on foothills adjacent to the Willamette Valley. The native vegetation consists of Dougals fir, Oregon white oak, Madrone and other shrubs and grasses. Elevations range from 300 to 1400 feet. The mean annual precipitation is 40 to 60 inches; mean annual air temperature is 52-54°F.; and the frost-free period is 165 to 210 days. These soils are associated with Jory, Nekia, Dupee, Willakenzie and Ritner soils.

The surface layer is dark reddish brown, silty clay loam about 8 inches thick. The subsoil is yellowish red and dark red silty clay or clay about 26 inches thick. The substratum is weathered sedimentary rock.

The above description is typical of Mapping Units 1-4 listed above except for steepness of slope and Unit 5 which contains 15-20% cobbles. Included are small areas of Jory, Ritner, and Dupee soils.

The permeability of this soil is slow. The surface runoff is slow, and the erosion hazard is slight on the gentle slopes. As the slopes increase in steepness, the runoff becomes rapid and the erosion hazard is severe. Total available water holding capacity is 3.5 to 6 inches. The natural fertility is low, and the workability is good on the gentler slopes.

This soil is used mainly for timber, pasture, hay, watershed and wildlife. A limited amount is also used for grains, row crops, orchards, recreation, and Christmas trees

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve				Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200				
0-8"	Silty clay loam	CL	A-7	0-10	100	100	95-100	85-95	0.63-2.00	.18-.20	5.6-6.0	Low	High
8-34"	Clay	MH	A-7	0-20	100	100	95-100	70-95	0.06-0.20	.13-.15	5.0-5.5	Moderate	High

Suitability as a source of topsoil is fair. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair to good.
Hydrologic group is C.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1.	Slight	
	2,3,5	Mod-severe	Rock at 20-40 inches; low shear strength; moderate to
	4	Severe	severe erosion hazard; excessive slope.
Dikes & Levees Pond Embankment	1,2,3,4	Slight-mod	Moderate shrink-swell potential; low shear strength; high compressibility.
	5	Severe	5. Stony in surface and subsoil.
Pond Reservoir Area	1,2,3,4	Moderate	Moderate shrink-swell potential; slow permeability; rock
	5	Severe	at 20-40 inches. 5. Stony in surface and subsoil; slopes.
Agricultural Drainage	1,2,3,4	--	Not needed, well drained.
	5		Slow permeability
Terraces & Diversions	1,2,3	Moderate	Excessive slope; rock at 20-40 inches
	4,5	Severe	5. Stony in surface or subsoil.
Grassed Waterways	1,2	Slight	Excessive slope; severe erosion hazard; fairly easy to estaboish vegetation.
	3,4,5	Severe	5. Stony in surface and subsoil.
Winter Grading	1,2,3,4	Severe	Clayey surface soil and subsoil; excessive slope.
	5.	Slight	5. Stony in surface and subsoil

Continuation Sheet
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Bellpine

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1. 2,3,5	Moderate Mod-severe	Rock at 20-40 inches; slow permeability; moderate shrink-swell potential; excessive slope.
	4	Severe	
Septic tank sewage disposal	1,2,3,4,5	Severe	SAME AS ABOVE
Lagoon sewage disposal	1,2,3,4,5	Severe	SAME AS ABOVE 5. Stony in surface or subsoil.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1. 2,3,4,5	Mod-severe Severe	Excessive slope; silty clay loam surface; slow permeability; rock at 20-40 inches.
Camp Areas	1. 2,3,4,5	Moderate Severe	Silty clay loam surface; slow permeability; excessive slope.
Picnic Areas	1. 2,3,4,5.	Moderate Severe	1. Silty clay loam surface 2,3,4,5. Excessive slope.
Paths & Trails	1,2,3, 4.	Moderate Severe	1,2,3. Silty clay loam surface 4. Excessive slope
	5.	Moderate	5. Slopes; cobbles.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Winter wheat (non-irrigated)	1,2	Good-fair; 3.Poor	40 bu/acre	1,2 Low fertility
	4,5	Not suitable		3,4,5. Low fertility; excessive slope.
Spring barley (non-irrigated)	1,2	Good-fair; 3.Poor	35 bu/acre	1,2. Low fertility
	4,5	Not suitable		3,4,5. Low fertility; excessive slope.
Blackberries (non-irrigated)	1,2	Good-fair; 3.Poor	4 tons/acre	1,2. Low fertility
	4,5	Not suitable		3,4,5. Low fertility; excessive slope.
Sweet cherries (non-irrigated)	1,2	Good-fair; 3.Poor	3 tons/acre	1,2. Low fertility
	4,5	Not suitable		3,4,5. Low fertility; excessive slope.
Filberts (non-irrigated)	1,2	Good-fair; 3.Poor	.6 tons/acre	1,2. Low fertility
	4,5	Not suitable		3,4,5. Low fertility; excessive slope.
Strawberries (irrigated)	1,2	Good-fair; 3.Poor	4 tons/acre	1,2. Low fertility
	4,5	Not suitable		3,4,5. Low fertility; excessive slope.
Pasture (irrigated)	1,2,3,5.	Good	14 AUMs	1,2. Low fertility
	4.	Poor	10 AUMs	3,4,5. Low fertility; excessive slope.
Christmas trees	1,2,3,5	Good to fair		SAME AS ABOVE
	4.	Poor		Suitable for a wide variety of species.
Land Capability	1 - IIe-2	2-IIIe-1	3-IVe-1	4-VIe 5-IVe-1.

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas fir	1,2,3, 4,5.	152-12 11 plots	Moderate	1.Slight 2,3.Mod.	Slight	Moderate	Moderate	DF, WF, Oak Madrone
				4. Severe 5.Slight to mod.				

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing

SOIL INTERPRETATIONS

State:_____ Soils: 1. Dayton silt loam 4. Dayton silt loam, thin surface
Date: April 1970 2. Dayton silt loam, thick subsoil 5. Dayton silt loam, thick surface
3. Dayton silt loam, gravelly substratum

The Dayton series consists of poorly drained, silt loam over clay soils formed from silty and clayey mixed alluvium. These soils occupy nearly level to slightly concave terraces and drainage ways. Where not cultivated, the vegetation consists of grasses, sedges, weeds, rose, and Oregon ash. Elevations range from 150 to 400 feet. The mean annual precipitation is about 40 inches, mean annual air temperature is 52° to 54°F., and the frost-free period is 165 to 210 days. Associated soils include Amity, Concord, and Holcomb soils.

The surface layer is dark gray mottled silt loam about 17 inches thick. The subsoil is dark grayish brown clay about 18 inches thick. The substratum is mottled grayish brown silty clay loam.

Mapping units 2 and 3 are similar to number 1 except that unit 2 has clay to below 60 inches, and unit 3 contains over 50% gravel below 36 inches. Unit 4 has only 8 to 12 inches of surface above the clay, and unit 5 has 18 to 24 inches of silt loam above the dense clay subsoil. Included in these units are small areas of Concord and Amity soils.

Permeability of this soil is very slow. The surface runoff is slow to ponded, and the erosion hazard is slight. Total available waterholding capacity above the clay pan is 3 to 6 inches and within 5 feet it is 10 to 13 inches. Natural fertility is low and the workability is good. Rooting is restricted by a seasonal water table and the dense clay at 12 to 24 inches.

This soil is used mainly for rye grass seed production and pasture.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve					Permeability	Available Water Capacity	Soil Reaction	Shrink Swell Potential	Corrosivity
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200	Inches Per Hour	Inches per Inch of Soil	(pH)		Uncoated Steel
0-17"	Silt loam	ML	A-4*	0	100*	90-100*	90-100	80-95*	.63 - 2.0	.23 - .25	5.6-6.0	Low	High
17-35"	Silty clay	CH or MH	A-7-6 (20)*	0	100*	90-100*	90-100	85-100*	Less than.06	.14 - .16	5.6-6.0	High	High
42-72"	Silty clay loam	CL	A-4 (8)*	0	100*	95-100*	90-100	85-100*	.63 - 2.0	.22 - .25	6.1-6.5	Moderate	High

*Based on laboratory test data.

Suitability as a source of topsoil is fair. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair to poor.
Hydrologic group is D.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	5	Moderate	Very slow permeability; high shrink-swell potential; seasonal water table at 0-6"; fair to poor stability.
	1,2,3,4	Severe	
Dikes & Levees Pond Embankment	1,2,3,4,5	Moderate	Low compacted permeability; high shrink-swell potential; good resistance to piping; very low shear strength.
Pond Reservoir Area	1,2,3,4,5	Slight	Very slow permeability; seasonal water table 0-6".
Agricultural Drainage	5	Moderate	Poorly drained; very slow permeability; nearly level.
	1,2,3,4	Severe	
Terraces & Diversions	1,2,3,4,5	---	Not needed; nearly level.
Grassed Waterways	1,2,3,4,5	Moderate	Dense clay subsoil; moderate resistance to erosion; fairly difficult to establish vegetation.
Winter Grading	1,2,3,4,5	Severe	Seasonal water table at 0-6"; silt loam surface soil.

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COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1,2,3,4,5	Severe	Very low shear strength; high shrink-swell potential in subsoil; seasonal water table 0-6".
Septic tank sewage disposal	1,2,3,4,5	Severe	Very slow permeability; seasonal water table at 0-6".
Lagoon sewage disposal	1,2,3,4,5	Slight	SAME AS ABOVE.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1,2,3,4,5	Severe	Seasonal water table at 0-6"; very slow permeability.
Camp Areas	1,2,3,4,5	Severe	SAME AS ABOVE.
Picnic Areas	1,2,3,4,5	Severe	Poorly drained.
Paths & Trails	1,2,3,4,5	Moderate to Severe	Poorly drained.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Common Ryegrass for seed	1,2,3,4,5	Fair	700-1000#/ac.	Seasonal high water table; dense clay subsoil limits root penetration.
Pasture (non-irrigated)	5	Good	13-15 AUMs	
	1,2,3,4,	Fair	9-12 AUMs	SAME AS ABOVE
Spring Barley (non-irrigated)	1,2,3,4,5	Poor	20-40 bu/ac	SAME AS ABOVE.
Sweet Corn (irrigated)	5	Fair	5-7 tons/ac	Poorly drained; permeability very slow
	1,2,3,4	Fair to poor	3-5 tons/ac	in subsoil; and SAME AS ABOVE.
Blackberries (irrigated)	1,2,3,4,5	Poor	2-3 tons/ac	SAME AS ABOVE.
Land Capability	1,2,3,4 IVw 5. IIIw			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Oregon Ash	1,2,3,4,5	-	-	Slight	Severe	Severe	Severe	Oregon ash cottonwood Oregon white oak

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing
		NOT APPLICABLE				

SOIL INTERPRETATIONS

State: Oregon Date: 7/27/70 Soils: 1. Sifton gravelly loam, 1-3% slopes
2. Sifton loam, 1-3% slopes

The Sifton Series consists of somewhat excessively drained gravelly loam over very gravelly coarse sand soils formed from gravelly alluvium. They occur on nearly level terraces at elevations of 30 to 800 feet. The mean annual air temperature is 50° to 54°F.; and the mean annual rainfall is 40 to 70 inches; the frost-free period is 165 to 210 days. Salem, Malabon and Clackamas are some associated soils. Native vegetation includes Douglas-fir and grasses. Scotchbroom readily invades idle fields.

The surface layer is black or very dark brown gravelly loam about 16 inches thick. The subsoil is dark brown very gravelly loamy coarse sand about 8 inches thick. The substratum is dark brown very gravelly coarse sand and many feet thick. Depth to the root restricting very gravelly layer is about 24 inches.

Texture ranges from gravelly loam to gravelly silt loam in the surface, and gravelly sandy loam to very gravelly loamy coarse sand in the subsoil. Gravel content in the surface ranges from 10 to 35 percent.

Permeability is very rapid. Runoff is slow and the erosion hazard is slight. The total available water holding capacity is 3 to 5 inches (5 to 6 inches for Sifton loam).

This soil is cultivated mainly for pasture, orchard, small grain and vegetables, and is rapidly being used for small acreage homesites.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve					Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200					
0-16"	Gravelly loam	SM	A-2 or A-4	5%	55-70	50-65	40-60	30-50	2.0-6.3	.12 - .16	5.0-5.4	Low	Mod.
16-24"	V.grav. loamy sand	GP-SM	A-1	10%	50-55	35-50	20-40	5-15	6.3-20.	.05 - .08	5.4-6.0	Low	Mod.
24-60"	V.grav. coarse sand	GP	A-1	15%	35-50	25-35	10-25	0-5	over 20.	.03 - .05	6.1-6.5	Low	Mod.

Suitability as a source of topsoil is good. Suitability as a source of sand and gravel is fair to good. Suitability as a source of road fill is good.
Hydrologic group is B.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1, 2	Slight	
Dikes & Levees Pond Embankment	1, 2	Severe	Rapid permeability; high gravel content impedes proper compaction for pond embankment.
Pond Reservoir Area	1, 2	Severe	Very rapid permeability below 24 inches; substratum is loose, open, very gravelly coarse sand.
Agricultural Drainage	1, 2	--	Not needed; somewhat excessively drained; rapid permeability
Terraces & Diversions	1, 2	--	Not needed; occurs on nearly level terraces.
Grassed Waterways	1	Severe	Somewhat excessively drained; rapid permeability; gravel occurs throughout; establishment of vegetation may be difficult.
	2	Moderate	
Winter Grading	1, 2	Slight	

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1, 2	Slight	
Septic tank sewage disposal	1, 2	Slight	(Susceptible to ground water pollution.)
Lagoon sewage disposal	1, 2	Severe	Very rapid permeability below 24 inches; high gravel content impedes proper compaction.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	2 1	Slight Moderate	Unit 1 has a gravelly surface; both have very gravelly substratum.
Camp Areas	2 1	Slight Moderate	Gravelly surface layer.
Picnic Areas	2 1	Slight Moderate	Gravelly surface layer.
Paths & Trails	2 1	Slight Moderate	Gravelly surface layer.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Winter Wheat (non-irrigated)	1, 2	Good	50 bu/ac.	Rooting depth may be restricted at 24"; somewhat excessively drained; gravelly surface in Unit 1.
Spring Barley (non-irrigated)	1, 2	Good	55 bu/ac.	SAME AS ABOVE.
Sweet Cherries (non-irrigated)	1, 2	Fair	2 tons/ac.	SAME AS ABOVE.
Filberts (non-irrigated)	1, 2	Good	0.6 tons/ac.	SAME AS ABOVE.
Pole Beans (irrigated)	1 2	Good Good	8 tons/ac. 9 tons/ac.	SAME AS ABOVE.
Sweet Corn (irrigated)	1 2	Fair Fair	4 tons/ac. 5 tons/ac.	SAME AS ABOVE.
Strawberries (irrigated)	1 2	Good Good	4 tons/ac. 4.5 tons/ac.	SAME AS ABOVE.
Pasture (irrigated)	1, 2	Fair	12 AUMs	SAME AS ABOVE.
Land Capability	1. IIIs 2. IIs			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing
		NOT APPLICABLE				

SOIL INTERPRETATIONS

State: Oregon Date: 4/69

Soils: 1. Bashaw clay
2. Bashaw silty clay
3. Bashaw silty clay thin variant

Bashaw soils consist of poorly drained, very fine textured soils formed from clayey mixed alluvium. They occupy nearly level depressional areas and drainage ways. Where not cultivated, the vegetation consists of ash, hawthorn, rushes, sedges, and grass. Elevations range from 100 to 600 feet. The mean annual precipitation is about 40 to 50 inches, mean annual air temperature is 52° to 54°F., and the frost-free period is 165 to 210 days. These soils are associated with Conser, Waldo and Natron soils.

The surface layer is black, mottled, silty clay or clay about 31 inches thick. The upper substratum is mottled, very dark gray clay about 17 inches thick. The lower substratum is dark grayish brown clay.

The Bashaw silty clay thin variant is the same as the Bashaw silty clay, but it has silty clay loam textures below 24 inches. Included are small areas of the lighter colored, poorly drained, clayey Natron soils, and the poorly drained silty clay loam Conser and Waldo soils.

The permeability of this soil is very slow. The surface runoff is slow to ponded and the erosion hazard is slight. Total available waterholding capacity is 8 to 10 inches. The natural fertility is moderate and the workability is poor.

This soil is used mainly for ryegrass seed, hay and pasture, and by wildlife.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve					Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200					
0-63"	Clay	MH* or CH	A-7-5* (20)	0	100*	90-* 100	90-100	70-98*	Less than .06	.14-.16	6.0-7.5	High	High

* Based on engineering tests

Suitability as a source of topsoil is not suitable. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is not suitable.
Hydrologic group is D.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1, 2, 3	Severe	High shrink-swell potential; very slow permeability; seasonal water table at surface.
Dikes & Levees Pond Embankment	1, 2, 3	Severe	Poor stability; low compacted permeability; high shrink-swell potential; good resistance to piping. Cracks when dry.
Pond Reservoir Area	1, 2, 3	Slight	Very slow permeability; seasonal water table at surface.
Agricultural Drainage	1, 2, 3	Severe	Very slow permeability; nearly level; poorly drained.
Terraces & Diversions	1, 2, 3	--	Not applicable.
Grassed Waterways	1, 2, 3	Moderate	High resistance to erosion; high waterholding capacity. Fairly difficult to establish vegetation.
Winter Grading	1, 2, 3	Severe	Clay or silty clay surface soil; seasonal water table at or near surface.

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Bashaw

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1, 2, 3	Severe	Very low shear strength; high compressibility. High shrink-swell potential.
Septic tank sewage disposal	1, 2, 3	Severe	Very slow permeability; seasonal water table at or near surface.
Lagoon sewage disposal	1, 2, 3	Slight	

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1, 2, 3	Severe	Clay or silty clay surface soil; poorly drained; very slow permeability.
Camp Areas	1, 2, 3	Severe	SAME AS ABOVE.
Picnic Areas	1, 2, 3	Severe	SAME AS ABOVE.
Paths & Trails	1, 2, 3	Severe	SAME AS ABOVE.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Perennial Rye & Alsike Clover (non-irrigated)	1, 2, 3	Fair	2.4 tons/ac	Poor workability; poorly drained; very slow permeability.
Alta fescue & sub. Clover (irrigated)	1, 2, 3	Fair	12 AUMs	SAME AS ABOVE.
Spring Barley	1, 2, 3	Poor	14 cwt/ac	SAME AS ABOVE.
Land Capability				

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
			NOT APPLICABLE					

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing
		NOT APPLICABLE				

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(File Code SOILS 12)

U. S. Department of Agriculture
Soil Conservation Service

SOIL INTERPRETATIONS

State: Oregon Date: 4/69 Soils: 1. Camas gravelly sandy loam

Camas soils consist of excessively drained, moderately coarse textured soils formed from recent sandy and gravelly alluvium. They occupy nearly level bottomlands. Where not cultivated, the vegetation consists of cottonwood, Bigleaf maple, ash, blackberries and other shrubs and grasses. Elevations range from 100 to 650 feet. The mean annual precipitation is 40 to 60 inches, mean annual air temperature is 52° to 54°F., and the frost-free period is 165 to 210 days. These soils are associated with Newberg and Cloquato soils.

The surface layer is very dark grayish brown gravelly sandy loam about 7 inches thick. The subsoil is brown very gravelly sandy loam about 6 inches thick. The substratum is coarse sand and gravel.

Depth to root restricting very gravelly sand ranges from 12 to 20 inches. Camas mapping units may include small areas of sandy loam Newberg soils and soil similar to Newberg but containing greater than 35% gravel between 20 to 40 inches.

The permeability of this soil is very rapid. The surface runoff is slow and the erosion hazard is moderate. Total available waterholding capacity is 2 to 3.75 inches.

This soil is used mainly for pasture, homesites, and as a source of gravel.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve					Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200					
0-7"	Gravelly sandy lm.	GM	A-2	5-10	70-80	65-75	45-55	20-30	2.00-6.3	.06-.12	5.6-6.5	Low	Low
7-13"	V.grav. sandy lm.	GM	A-1	5-15	55-65	50-60	30-40	15-25	6.3-20.	.06-.09	5.6-6.5	Low	Low
13-40"	V.grav. sand	GP	A-1	5-15	25-35	20-30	15-25	0-5	over 20.			Low	Low

Suitability as a source of topsoil is not suitable. Suitability as a source of sand and gravel is poor sand, excellent gravel. Suitability as a source of road fill is good. Hydrologic group is A.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1	moderate-severe	Very rapid permeability; low shrink-swell potential; subject to flooding.
Dikes & Levees Pond Embankment	1	severe	Fair stability; high compacted permeability; low shrink-swell potential; high shear strength.
Pond Reservoir Area	1	severe	Very rapid permeability; gravel occurs below 12 to 20".
Agricultural Drainage	1	--	Very rapid permeability; excessively drained; subject to flooding.
Terraces & Diversions	1	--	Not applicable.
Grassed Waterways	1	moderate-severe	High resistance to erosion; very low waterholding capacity; difficult to establish vegetation.
Winter Grading	1	slight	Subject to flooding.

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1	severe	High shear strength; low shrink-swell potential; subject to flooding.
Septic tank sewage disposal	1	severe	Very rapid permeability; hazard of polluting surface and ground water; subject to flooding.
Lagoon sewage disposal	1	severe	SAME AS ABOVE.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1	severe	Subject to flooding; gravelly surface.
Camp Areas	1	severe	SAME AS ABOVE.
Picnic Areas	1	severe	SAME AS ABOVE
Paths & Trails	1	moderate	SAME AS ABOVE.

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Bush Beans (irrigated)	1	Poor or not suitable	2-3 tons/ac	Excessively drained; subject to flooding; very low waterholding capacity; poor workability.
Sweet Corn (irrigated)	1	Poor or not suitable	4 tons/ac	SAME AS ABOVE.
Strawberries (irrigated)	1	Poor or not suitable	3 tons/ac	SAME AS ABOVE.
Pasture (irrigated)	1	Fair	9 AUMs	SAME AS ABOVE.
Winter Wheat (non-irrigated)	1	Poor or not suitable	30-35 bu/ac	SAME AS ABOVE.
Spring Barley (non-irrigated)	1	Poor or not suitable	28-35 bu/ac	SAME AS ABOVE.
Blackberries (non-irrigated)	1	Fair	2 tons/ac	SAME AS ABOVE
Land Capability	IVw-3			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Cottonwood	1		severe	moderate	moderate	slight-mod.	slight	Cottonwood

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing

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SOIL INTERPRETATIONS

U. S. Department of Agriculture
Soil Conservation Service

State: Oregon

Date: 12/69

Soils:
1. Jory silty clay loam, 2-7% slopes
2. Jory silty clay loam, 7-12% slopes
3. Jory silty clay loam, 12-20% slopes
4. Jory silty clay loam, 20-30% slopes
5. Jory clay loam, 2-30% slopes
6. Jory clay loam, 30-60% slopes
7. Jory clay loam, 60-90% slopes

Jory soils consist of deep, well drained, silty clay loam over clay soils formed from colluvium of basic igneous and tuffaceous materials. They occur on low rolling foothills with slopes of 2 to 90%. The native vegetation consists of Douglas fir, Oregon oak, poison oak and other shrubs and grasses. Elevations range from 250 to 1200 feet. The mean annual precipitation is 40 to 60 inches; mean annual air temperature is 52 to 54°F., and the frost free period is 165 to 210 days. These soils are associated with Nekia, Witzel and Salkum soils.

The surface layer is dark reddish brown, silty clay loam 12 to 27 inches thick. The subsoil is dark reddish brown clay 24 inches to many feet thick. The substratum is weathered basalt bedrock. Depth to bedrock is over 40" and is usually over 5 feet.

Textures are silty clay loam or clay loam in the surface and clay in the subsoil. The amount of coarse fragments ranges from none to 15% in the upper 3 or 4 feet and may increase to 50% below.

The permeability of this soil is moderately slow. The surface runoff is slow, and the erosion hazard is slight on the gentle slopes. As the slopes increase in steepness, the runoff becomes rapid and the erosion hazard is severe. Total available water holding capacity is 9 to 11 inches. The natural fertility is moderate, and the workability is fair on the gentler slopes and poor on the steeper ones.

This soil is used mainly for woodland, hay, orchards, berries and grass seed. Other uses include wildlife, recreation, water supply, and home sites.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification			% of Material Passing Sieve				Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200				
0-9"	Silty clay loam	ML or CL	A-7-5*	0	100	95-100*	65-75*	55-70*	.63-2.0	.19-.21	5.1 6.0	Low to Moderate	High
28-47"	Clay	MH or ML	A-7-5*	0-10	100*	90-100*	80-90*	75-85*	.20-.63	.15-.18	4.5 5.5	Low to Moderate	High

*Based on engineering test data

Suitability as a source of topsoil is fair. Suitability as a source of sand and gravel is not suitable. Suitability as a source of road fill is fair.
Hydrologic group is C.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1,2	Slight	Moderate shrink-swell potential; moderately slow permeability; good cutbank stability; 12-30% slopes.
	3,4,5	Moderate	
	6,7	Severe	Steep slopes
Dikes & Levees Pond Embankment	1,2,3,4,5	Moderate	Low compacted permeability; low shear strength; moderate shrink-swell potential.
	6,7	Severe	Very steep slopes.
Pond Reservoir Area	1,2	Slight	Moderately slow permeability; 2-12% slopes
	3,4,5	Moderate	12-30% slopes
	6,7	Severe	30-90% slopes
Agricultural Drainage	1,2,3,4,5 6,7	Not applicable	Well drained
Terraces & Diversions	1,2	Slight	Moderate - high resistance to erosion;
	3	Moderate	12-20% slopes
	4,5,6,7	Severe	Mainly 20-90% slopes
Grassed Waterways	1,2	Slight	High water holding capacity; fairly easy to establish
	3	Moderate	vegetation; 2-20% slopes
	4,5,6,7	Severe	Mainly 20-90% slopes.
Winter Grading	1,2,3,4, 5,6,7	Severe	Silty clay loam surface soil; 2-90% slopes.

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COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1,2	Slight	Low shear strength; moderate shrink-swell potential
	3,4,5	Moderate	
	6,7	Severe	30-90% slopes
Septic tank sewage disposal	1,2,3,4,5	Severe	Moderately slow permeability; depth to bedrock 40-100"
	6,7		30-90% slopes
Lagoon sewage disposal	1	Mod-severe	Moderately slow permeability
	2,3,4,5,6,7	Severe	7-90% slopes

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1	Moderate	2-7% slopes; silty clay loam surface soil; moderately slow permeability.
	2,3,4,5,6,7	Severe	7-90% slopes mainly
Camp Areas	1,2	Moderate	SAME AS ABOVE
	3,4,5,6,7	Severe	12-90% slopes mainly
Picnic Areas	1,2	Moderate	Silty clay loam surface soil: 0-12% slopes
	3,4,5,6,7	Severe	12-90% slopes mainly
Paths & Trails	1,2,3	Moderate	Silty clay laom surface soil
	4,5	Mod-severe	Mainly 20-30% slopes
	6,7	Severe	30-90% slopes

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
Sweet corn (irrigated)	1.	Good	7 tons/ac.	Good workability; 2-30% slopes;
	2,3,4	Fair to poor	5 tons/ac.	moderate to high erosion hazard.
Strawberries (irrigated)	1.	Good	4 tons/ac.	Subject to compaction with tramping
	2,3,4	Fair to poor	--	when wet.
Pasture (irrigated)	1,2,3,4	Good	15 AUM's	SEE ABOVE FACTORS
Winter Wheat (non-irrigated)	1,2,3	Good	45 bu/ac.	Moderate to high erosion hazard;
	4	Fair	30-40 bu/ac.	2-30% slopes; moderate fertility
Spring Barley (non-irrigated)	1,2,3	Good	40 bu/ac.	
	4	Fair	30-40 bu/ac.	SEE ABOVE FACTORS
Blackberries (non-irrigated)	1,2,3	Good		Very deep soil; high water holding
	4	Fair	4 tons/ac.	capacity; 2-30% slopes
Sweet Cherries (non-irrigated)	1,2,3	Good		
	4	Fair	3 tons/ac	SEE ABOVE FACTORS.
Filberts (non-irrigated)	1,2,3	Good		
	4	Fair	.8 tons/ac.	SEE ABOVE FACTORS.
Land Capability	1. IIe 2,3 IIIe 4,5 IVe 6 VIe 7 VIIe.			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas fir	1,2	157	Moderate	Slight	Slight	Moderate	Moderate	DF
" "	3	157	Moderate	Moderate	Slight	Moderate	Moderate	DF
" "	4,5,6,7	157	Moderate	Severe	Slight	Moderate	Moderate	DF

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing

OR-SOILS-1
Rev. 8-4-69
(File Code SOILS 12)

U. S. Department of Agriculture
Soil Conservation Service

SOIL INTERPRETATIONS

State: OREGON Date: Oct. 1970 Soils: 1. Kilchis - Klickitat complex, 60-90% slopes

KILCHIS SERIES

The Kilchis series consists of well or excessively well drained stony loam over gravelly silt loam soils formed in colluvial material weathered from basic igneous, rock. The soils occur on very steep sideslopes and mountainous topography in the Coast Range. Vegetation consists of Douglas-fir, hemlock, vine mapel, sword fern, and grasses. Elevations range from 500 to 3500 feet. The mean annual precipitation is 80 to 120 inches; mean annual air temperature is 48° to49°F; and the frost-free period is 145 to 200 days. These soils are associated with the Klickitat, Hembre and Trask soils.

The surface layer is dark reddish brown, stony loam about 5 inches thick. The subsoil is dark reddish brown gravelly silt loam about 14 inches thick. The substratum is shattered fine grained basalt rock.

The depth to basalt bedrock ranges from 12 to 20 inches. The surface layer ranges from stony loam to stony silt loam. Coarse fragments occupy from 25 to over 50 percent by volume of the surface layer. They occupy 35 to 85 percent of the subsoil.

The permeability is moderately rapid. Surface runoff is rapid and the erosion hazard is very severe. Total available water holding capacity is 1 to 2 inches. Estimated water supplying capacity is 16 to 20 inches.

These soils are used mainly for timber production. Other uses include recreation, wildlife and water supply. These soils occur in the Coast Range and Valley Resource Area.

ENGINEERING INTERPRETATIONS

Estimated Chemical and Physical Properties

Depth from surface of typical profile Inches	Classification				% of Material Passing Sieve				Permeability Inches Per Hour	Available Water Capacity Inches per Inch of Soil	Soil Reaction (pH)	Shrink Swell Potential	Corrosivity Uncoated Steel
	USDA Texture	Unified	AASHO	Over 3"	#4	#10	#40	#200					
0-5"	Stony loam	GM	A-4 or A-2	5-20%	55-75	50-70	40-65	30-50	.63-2.0	.08-.13	5.0-5.5	Low	High
5-19"	Gravelly silt loam	GM	A-4 or A-2	10-40%	55-75	50-70	40-65	30-50	2.0-6.3	.09-.13	4.5-5.0	Low	High
19"	Shattered, fine grained basalt rock.												

Suitability as a source of topsoil is Unsuitable. Suitability as a source of sand and gravel is Unsuitable to Good. Suitability as a source of road fill is Fair to Good.
Hydrologic group is C. Liquid limit is 25 to 35 and plasticity index is 5 to 10.

INTERPRETATIONS OF ENGINEERING PROPERTIES

Use	Soil	Limitation	Major Factors Affecting Use
Highway Location	1	Severe	60 to 90% slopes
Dikes & Levees Pond Embankment	1	Severe	Stony in surface layer or subsoil
Pond Reservoir Area	1	Severe	60 to 90% slopes; depth to bedrock at less than 20 inches from surface.
Agricultural Drainage	---	---	NOT APPLICABLE
Terraces & Diversions	---	---	NOT APPLICABLE
Grassed Waterways	---	---	NOT APPLICABLE
Winter Grading	1	Severe	60 to 90% slopes; depth to bedrock at less than 20 inches from surface

Continuation Sheet
OR-SOILS-1
Rev. 8-4-69 Kilchis-Klickitat complex

COMMUNITY INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Foundations for low buildings	1	Severe	60 to 90% slopes; bedrock at less than 20 inches from surface
Septic tank sewage disposal	1	Severe	60 to 90% slopes; bedrock at less than 20 inches from surface
Lagoon sewage disposal	1	Severe	60 to 90% slopes; bedrock at less than 20 inches from surface; stony in surface layer or subsoil.

RECREATION INTERPRETATIONS

Use	Soil	Limitation	Major Factors Affecting Use
Playgrounds	1	Severe	60 to 90% slopes
Camp Areas	1	Severe	60 to 90% slopes
Picnic Areas	1	Severe	60 to 90% slopes
Parks & Trails	1	Severe	60 to 90% slopes; stony in surface layer or subsoil

AGRICULTURE INTERPRETATIONS

Major Crops	Soil	Suitability	Optimum Yields	Major Factors Affecting Use
		NOT APPLICABLE		
Land Capability	VIIs			

WOODLAND INTERPRETATIONS

Species	Soil	Site Index	Limitations					Native Species
			Seedling mortality	Erosion hazard	Windthrow hazard	Plant Competition	Equipment Limitations	
Douglas-fir	1	Est. 95-125	Severe	Very Severe	Severe	Moderate	Severe	----------
								Hemlock

RANGE INTERPRETATIONS

Site Name	Soil	Key Species and %	Pot. Yields		Normal Season	
			Total Lb/Ac	Usable Ac/AUM	Growing	Grazing
		NOT APPLICABLE				

AGRICULTURE, HORTICULTURE AND LIVESTOCK POTENTIALS

The growth of the agricultural industry is tied to the productive capacity of the valley soils, to the variety and excellence of the fruits and row crops, and to the increasing use of irrigation. As reported in the 1971-72 Oregon Blue Book, "Oregon leads the nation in the production of winter pears, sweet cherries, filberts, snap beans, cane berries, peppermint, processing strawberries, and several seed crops, including chewings and red fescue, bentgrass, crimson clover and ryegrass. The state holds second rank in broccoli, hairy vetch seed, Merion Kentucky Bluegrass seed, cauliflower and Bartlett pears."

Agricultural products in the Willamette Valley find markets in many stages. However, local processing of fruits and vegetables greatly increases the value to the economy of the community. An increase in agricultural production would create a need for expansion or development of agriculture related industries, principally food-processing plants, seed cleaning establishments, fertilizer, equipment and supply dealers, and livestock handling facilities.

FARMS

The Agricultural Census for Linn, Lane and Benton counties shows the diversified nature of agriculture in the three-county area. The statistics for Lane County include western Lane county, which is outside the valley area; however, agriculture is relatively unimportant in this part of the county where logging, wood products, and recreation are the dominant industries. Farms in the three counties are predominately owner-operated. Leasing of adjacent land is quite common.

The following data on farms is taken from the Agricultural Census:

County	Number of Farms	County Land in Farms (%)	Average Size of Farms (acres)
Benton	575	30	224
Lane	1,840	9	147
Linn	1,742	26	216

The smallest county, Benton, has a high percentage of its total land in farms. Linn and Lane counties have smaller percentages in farms as much of their land is forests; however, their total acreage in farms is much greater than Benton's. Detailed information on number, size, ownership, sales, type, and other characteristics of farms is available from the Census of Agriculture which is taken every five years.

VALUE OF FARM MARKETINGS - 1969
(Farms with Sales of $2500 and over)

	Benton County	Linn County	Lane County
Crops, including nursery products and hay:			
Grains	$ 521,419	$ 866,461	$ 363,831
Field seeds, hay, forage and silage	2,431,990	13,740,523	2,229,676
Other field crops	735,831	1,664,364	1,345,318
Vegetables, sweet corn and melons	1,164,874	2,853,107	3,761,568
Fruits, nuts and berries	207,945	1,124,989	1,786,433
Nursery and greenhouse products	166,496	477,430	2,029,709
Total	$ 5,228,555	$20,726,874	$11,516,535
Forest products from farms	452,785	225,546	539,214
Livestock, poultry and their products:			
Poultry and poultry products	106,609	2,568,208	2,813,991
Dairy products	828,520	2,272,058	2,141,448
Dairy cattle and calves	74,151	325,509	246,226
Other cattle and calves	700,755	2,192,139	2,835,017
Hogs, sheep and goats	333,086	1,710,490	506,123
Other livestock and livestock products	165,063	641,360	178,154
Total	$ 2,208,184	$ 9,709,764	$ 8,720,959
TOTAL CROPS, LIVESTOCK AND FOREST PRODUCTS	$ 7,889,524	$30,662,184	$20,776,708

COST-RETURNS

The Oregon Cooperative Extension Service and the Soil Conservation Service of the U. S. Department of Agriculture have both made enterprise cost-returns for many different crops and agricultural enterprises over the past several years. These cost-returns are useful in many different circumstances for estimating the net return that can be expected from agricultural endeavors (usually computed on a per acre basis), estimating the amount of capital required, and listing in sequence the cultural and harvesting operations generally used in production.

Caution must be observed in using these cost-returns since a charge for the farm operator's labor, taxes, and interest on the land investment are often included in the total costs. To determine the amount available to pay for one of these items is often the purpose of an analysis. In this case, the estimated cost of the item is deleted from total cost and the resulting net income is what will be available for the item.

The following exhibits are example cost-returns for barley, bush beans, and perennial ryegrass seed. They have been adapted with only minor changes from enterprise cost-returns made by the Extension Service. For cost-return information on other crops contact your local Extension office or the Soil Conservation Service.

BARLEY, WILLAMETTE VALLEY
1970

Based on:

1. 100 acres of barley on 500 acre farm
2. 1½ ton yield
3. 80 H.P. tractor @ $4.50/hr.
4. Operator labor @ $2.50/hour
   Hired labor @ $2.00/hour

	INPUTS PER ACRE					
	Labor			Other		Total
	Hrs.	Value ($)	Machinery ($)	Qty.	Value ($)	Cost ($)
Cultural Operations						
Plow & harrow	.4	1.00	2.40			3.40
Disc 14' (2x)	.4	1.00	2.55			3.55
Roll and "go-devil"	.1	.25	.55			.80
Springtooth and Roll (2x)	.4	1.00	2.30			3.30
Fertilize	.1	.25	.50	mat'l	5.00	5.75
Drill and Fertilize	.25	.65	1.65	seed	4.00	
				fert.	6.20	2.50
Herbicide	.1	.25	.50	mat'l	.70	1.45
Harvest Operations						
Combining, 12' SP	.4	1.00	5.45			6.45
Hauling	.4	.80	1.00			1.80
Other Expenses						
General Overhead 1/					1.55	1.55
Taxes on land					8.00	8.00
Interest on average operating capital @ 8%					.70	.70
Interest on land, $400/acre @ 6%					24.00	24.00
Total Costs						73.25

Income and Costs by Production Levels

Yield per Acre (Tons)	1.0	1.5	2.0
Gross Income @ $40.85/ton	$40.85	$61.30	$81.70
Total Cost	72.40	73.25	74.10
Net Income	$-31.55	$-11.95	$ 7.60

1/ Approximately five percent of cash expenses.

Timing of operations varies widely, but in most cases seed bed preparation is done in February or March, seeding and fertilizing in the first part of April, weed control in May, with harvesting being done in August.

These data were obtained and computed by county agents and farm management specialists in cooperation with Willamette Valley growers, revised May 1970.

BUSH BEANS
Marion and Washington Counties
1968

Based on:

1. 100 acres on a 300-acre diversified crop farm
2. 3.5 ton/acre graded yield @ $90/ton
3. Tractors: 90, 60, 30 H.P. @ $3.20, $2.50, $2.00/hr.
4. Tractor labor $2.50/hr., Irrigation labor $2.00/hr.
5. In rotation with grain crop, or use cover crop.
6. Use insecticide spray when necessary, $6.50/acre total cost.

	INPUTS PER ACRE					
	Labor			Other		Total
	Hrs.	Value ($)	Machinery ($)	Qty.	Value ($)	Cost ($)
Cultural Operations						
Subsoil (2-chisel plow)	.30	.75	1.30			2.05
Plow	.50	1.25	2.20			3.45
Disc (3 times)	.60	1.50	2.50			4.00
Springtooth & Roll (3 times)	.8	2.00	2.60			4.60
Fertilize	--	--	Custom $1	Fert.	7.00	8.00
Weed Spray (applied in discing operation)				Chem.	15.00	15.00
Plant and side dress	--	--	Custom $6	Seed	35.00	41.00
Fertilizer (4 row)	--	--		Fert.	18.00	18.00
Irrigate 4x	5.3	10.60	(rented)	Elect.	8.00	18.60
Cultivate 2x	.5	1.25	1.50			2.75
Other Weed Control	2.0	5.00				5.00
After harvest cleanup (disc)	.2	.50	.80			1.30
Harvest Operations						
Picking ($17.50/ton)				Custom	61.30	61.30
Hauling ($3.00/ton)				Custom	10.50	10.50
Other Expenses						
Land rent, includes irrigation equipment					55.00	55.00
General farm overhead 1/					11.00	11.00
Interest on operating capital					3.60	3.60
Total Costs						265.15

1/ 5% of cash costs

Income and Costs by Production Levels

Yield per Acre (Tons)	2.5	3.5	4.5
Gross Income ($90/ton)	$225.00	$315.00	$405.00
Total Cost	244.15	265.15	286.20
Net Income	$-19.15	$ 49.85	$118.80

These data were obtained and computed by county agents and farm management specialists in cooperation with Marion and Washington county growers, April 1968.

PERENNIAL RYEGRASS SEED
Linn County
1969

Based on:

1. 150 acres on a 600 acre farm (all in grass seed)
2. 900 lbs. yield (clean seed)
3. Spring planted
4. 6 yr. stand life (after estab.)
5. Labor at $2.50/hour
6. 100 H.P. tractor @ $5/hour, 2 plow tractor @ $2/hour

	INPUTS PER ACRE					
	Labor			Other		Total
ESTABLISHMENT YEAR	Hrs.	Value ($)	Machinery ($)	Qty.	Value ($)	Cost ($)
Cultural Operations						
Plow (spring)	.5	1.25	3.60			4.85
Harrow and Roll (3x)	.5	1.25	3.50			4.75
Springtooth and Roll (3x)	.6	1.50	3.90			5.40
Level (2x)	.5	1.25	2.80			4.05
Seed and Fertilize	.2	.50	.80	seed-25#	3.75	
				124#16-20	5.00	10.05
Spray (2,4-D)				1 qt.	.75	
				cus. app.	1.25	2.00
Other Expenses						
Taxes on land					5.00	5.00
Interest on investment in land $300 @ 6%					18.00	18.00
Interest on operating capital @ 8%					1.45	1.45
General Overhead 1/					1.85	1.85
Total Establishment Cost						57.40
Income						
Credit for grazing (sheep)						(2.00)
Net Establishment Cost						57.40
Annual Establishment Cost						
Amortized over 6 years @ 7% (.20979)						11.60/ year

1/ 7% of cash costs

These data were obtained and computed by county agents and farm management specialists in cooperation with Linn County farmers, October 1969.

AGRICULTURAL PRODUCTS SUITABLE* TO BE GROWN IN THIS AREA

Vegetables

Asparagus	Lettuce	Radishes
Beans	Onions	Rhubarb
Beets	Parsley	Rutabagas
Broccoli	Parsnips	Spinach
Cabbage	Peas	Squash
Carrots	Peppers	Sweet Corn
Cauliflower	Potatoes	Swiss Chard
Cucumbers	Pumpkins	Tomatoes
		Turnips

Fruits & Nuts

Apples	Pears	Filberts
Apricots	Plums	Walnuts
Cherries		

Berries

Blueberries	Gooseberries
Cane Berries**	Strawberries

Cereal Grain & Forage

Barley	Alfalfa
Corn	Clover
Oats	Pasture (Grass & Legumes)
Rye	Sudan
Wheat	

Seed

Annual & Perennial Rye Grasses	Clover	Sugar Beet Seed
	Fine Fescues	Tall Fescues
	Harding Grass	
Bent Grasses	Lotus (trefoils)	Numerous vegetable
Blue Grasses	Orchard Grasses	& flower seed crops

Specialty Crops

Bulbs	Garlic	Mint
Christmas trees	Holly	Mustard
Currants	Hops	Nursery stock
Dill	Horseradish	

Animal Products

Beef	Goats	Poultry
Dairy	Mink furs	Sheep
		Swine

* There are numerous crops suitable for home garden production but are not grown in this area as yet.

** They include numerous varieties of blackberries, loganberries, red raspberries, black raspberries, Marion berries, nectar berries.

MAJOR AGRICULTURAL PROCESSORS 1/
in the
Upper Willamette Valley
1970

Product and Firm	Location	Employment Regular	Employment Peak
Freeze-Dried Foods:			
Oregon Freeze Dry Foods, Inc.	Albany	200	
Fruits and Vegetables:			
Albany Frozen Foods, Inc.	Albany	130	501
Stokely - Van Camp, Inc.	Albany	140	325
Agripac Inc. 2/	Eugene	468	1,285
Manning's Famous Foods, Inc.	Eugene	85	
Agripac Inc.	Salem	300	1,400
Cascade Food Products, Inc.	Salem	35	125
Del Monte Corp.	Salem	100	1,300
Dole Co.	Salem	300	994
Kelley-Farquhar & Co.	Salem	203	627
Libby-McNeill & Libby	Salem	85	250
Oregon Fruit Products Co.	Salem	20	230
Starr Foods, Inc.	Salem	26	100
Sunset Packing Co. of Oregon	Salem	50	200
Stayton Canning	Salem	540	1,302
U.S.P. Corp.	Salem	140	400
Willamette Cherry Growers, Inc.	Salem	85	425
Stayton Canning	Stayton	1,500	
Meats:			
D. E. Nebergall Meat Co.	Albany	115	
Smoke-Craft, Inc.	Albany	250	
Poultry:			
Mutual Produce Co. 3/	Corvallis	61	
Willamette Poultry Co.	Creswell	60	
Oregon Turkey Growers	Salem	60	188
Pilgrim Turkey Packers, Inc.	Salem	150	200
Dairy:			
Echo Spring Dairy	Eugene	50	
Eugene Farmers Creamery	Eugene	110	
Medo-Land Creamery Co.	Eugene	125	130
Curly's Dairy, Inc.	Salem	60	
Lochmead Dairy	Junction City	5	
Mushrooms:			
West Foods, Inc.	Salem	250	

1/ Salem and Stayton included
2/ Also processes filberts and walnuts.
3/ Also processes eggs

FEED AND/OR SEED PROCESSORS

Adams Feed & Seed Store	Springfield
Berger & Plate Company of Oregon	Harrisburg
Brownsville Feed & Seed	Brownsville
Farmers Warehouse Inc.	Junction City
Jenks-White Seed Co.	Tangent
Kropf Feed & Seed	Harrisburg
Mill-Rite Farms	Albany
Nofziger Seed Co.	Lebanon
Normarc Inc.	Tangent - Harrisburg
Northrup King & Co.	Albany
Pacific Supply Coop. (Seed Packaging Plant)	Tangent
Rudy Patrick Co.	Halsey
A. B. Ryals Feed & Seed	Harrisburg
Santiam Pellet Mill Inc.	Aumsville
Small Feed Co.	Eugene
Thompsons Mills Inc.	Shedd
Wilcox Seed Co.	Harrisburg
Willamette Seed & Grain Co.	Albany - Harrisburg

APPENDIX

MAPS

Aerial Photographs:

Agricultural Stabilization & Conservation Service
1218 S. W. Washington Street
Portland, Oregon 97205

ASCS--Benton ASC County Committee
P. O. Box 1027
Corvallis, Oregon 97330

Linn ASC County Committee
425 W. 1st Avenue
Albany, Oregon 97321

Lane ASC County Committee
950 13th Avenue West
Eugene, Oregon 97402

Bureau of Land Management
1255 Pearl Street
Eugene, Oregon 97401

3550 Liberty Road
Salem, Oregon 97301

Corps of Engineers - Army Map Service
Room 204 Custom House
220 N. W. 8th
Portland, Oregon 97209

Counties--Assessors' and Engineers' offices:

Benton County Assessor Courthouse Corvallis, Oregon 97330	Benton County Engineer 360 S. W. Avery Avenue Corvallis, Oregon 97330
Lane County Assessor Courthouse Eugene, Oregon 97401	Dept. of Public Works 1820 Roosevelt Blvd. Eugene, Oregon 97402
Linn County Assessor Courthouse Albany, Oregon 97321	Linn County Engineer Courthouse Albany, Oregon 97321

Department of Revenue
State Office Building
Salem, Oregon 97310

Department of Transportation
Oregon Highway Division
Information Section
Salem, Oregon 97310

MAPS (continued)

Oregon State Department of Forestry
2600 State Street
Salem, Oregon 97310

Soil Conservation Service
1218 S. W. Washington Street
Portland, Oregon 97205

SCS--2216 E. 9th Street
Albany, Oregon 97321

663 Jackson Street
Corvallis, Oregon 97330

954 13th Avenue West
Eugene, Oregon 97402

2nd & Smith Street, P.O.B. 285
Harrisburg, Oregon 97446

968 Juniper Street, P.O.B. 107
Junction City, Oregon 97448

First and North Ash, P.O.B. 86
Scio, Oregon 97374

U. S. Forest Service

Division of State & Private Forestry
USFS--Region VI
P. O. Box 3623
Portland, Oregon 97208

Siuslaw National Forest
545 S. W. 2nd
Corvallis, Oregon 97330

Willamette National Forest
210 11th Avenue East, P.O.B. 1272
Eugene, Oregon 97401

Umpqua National Forest
26 N. 6th Street
Cottage Grove, Oregon 97424

Line Maps:

Counties--Assessors and Engineers' offices (page 60)

Benton County Planning Dept.
City Hall, 501 Madison Street
Corvallis, Oregon 97330

Linn County Planning Dept.
Courthouse
Albany, Oregon 97321

Lane County Planning Dept.
135 East Sixth Avenue
Eugene, Oregon 97401

Oregon Highway Division (page 60)

Soil Conservation Service (See above)

Councils of Government - Regional Authorities

Oregon Dist. 4 COG
360 S. W. Avery Avenue
Corvallis, Oregon 97330

Lane Council of Governments
135 Sixth Avenue East
Eugene, Oregon 97401

MAPS (continued)

Topography:

County Surveyor or Public Works Consultant

Benton County Surveyor
Courthouse
Corvallis, Oregon 97330

Benton County Engineer
360 S. W. Avery Avenue
Corvallis, Oregon 97330

Lane County Surveyor
135 East Sixth Avenue
Eugene, Oregon 97401

Lane Dept. of Public Works
1820 Roosevelt Blvd.
Eugene, Oregon 97402

Linn County Surveyor
Courthouse
Albany, Oregon 97321

Linn County Engineer
Courthouse
Albany, Oregon 97321

Oregon Highway Division (page 60)

Soil Conservation Service (page 61)

U. S. Geological Survey

P. O. Box 3202
Portland, Oregon 97208

125 Lawrence Street, P.O.B. 808
Eugene, Oregon 97401

CLIMATE

Local Climatological Data:

Corps of Engineers (page 60)

National Weather Service Office
Dept. of Commerce--NOS&AA
Rt. 1 Box 720
Eugene, Oregon 97401

Soil Conservation Service (page 61)

U. S. Forest Service (page 61)

POPULATION

Employment Division
Research and Statistics Section
402 Labor and Industries Building
Salem, Oregon 97310

U. S. Dept. of Commerce
921 S. W. Washington Street
Portland, Oregon 97205

Portland State University
Center for Population Research & Census
P. O. Box 751
Portland, Oregon 97207

LABOR FORCE

Oregon State Employment Division
Research & Statistics Section
Salem, Oregon 97310

Vocational Rehabilitation Division
680 Cottage Street N. E.
Salem, Oregon 97310

TRANSPORTATION

Roads:

Counties--Engineers' offices (page 60)

Department of Transportation
Highway Division
Highway Building
Salem, Oregon 97310

Federal Highway Administration
Region VIII
222 S. W. Morrison
Portland, Oregon 97204

Rail:

Interstate Commerce Commission
Multnomah Building
319 S. W. Pine
Portland, Oregon 97204

Air:

Federal Aviation Administration
General Aviation District Office No. 10
5410 N. E. Marine Drive
Portland, Oregon 97218

PUBLIC UTILITIES

Public Utility Commissioner
200 Public Service Building
Salem, Oregon 97310

INDUSTRY

Department of Commerce
Commerce Building
158 12th Street N. E.
Salem, Oregon 97310

Dairy Products Commission
0123 S. W. Hamilton Street
Portland, Oregon 97201

Employment Division
402 Labor and Industries Building
Salem, Oregon 97310

Executive Department
Human Resources Support Division
Economic Opportunity Section
313 Public Service Building
Salem, Oregon 97310

INDUSTRY (continued)

Executive Department
Economic Development Support Div.
109 State Capitol
Salem, Oregon 97310

Executive Department
Local Government Relations Div.
320 Public Service Building
Salem, Oregon 97310

Oregon State Dept. of Forestry (pg.61)

Fryer Commission of Oregon
Highland Bentgrass Commission
Processed Prune and Plum Growers Com.
Oregon Ryegrass Growers Seed Com.
Oregon Strawberry Commission
Agriculture Building
635 Capitol Street N. E.
Salem, Oregon 97310

Oregon Hop Commission
Rt. 1 Box 92
Mt. Angel, Oregon 97362

Bureau of Labor
115 Labor and Industries Building
Salem, Oregon 97310

Bureau of Labor
Room 301 State Office Building
Eugene, Oregon 97401

Orchardgrass Seed Prod. Com.
4491 Liberty Road South
Salem, Oregon 97302

Oregon Potato Commission
2342 Commercial St. S. E.
Salem, Oregon 97302

State Soil & Water Cons. Com.
217 Agriculture Building
635 Capitol Street N. E.
Salem, Oregon 97310

Workmen's Compensation Board
Labor & Industries Building
Salem, Oregon 97310

EDUCATION, RECREATION, ETC.

Elementary & Secondary:

Dale Parnell
Supt. of Public Instruction
Oregon Board of Education
942 Lancaster Drive N. E.
Salem, Oregon 97310

Higher Education:

Roy E. Lieuallen, Chancellor
State Board of Higher Education
University of Oregon Campus
Eugene, Oregon 97403

Recreation:

Department of Transportation
Highway Division
Parks & Recreation Section
State Hwy. Building
Salem, Oregon 97310

Lane County Parks & Rec. Dept.
1820 Roosevelt Blvd., Box 2729
Eugene, Oregon 97402

Linn County Parks Dept.
Courthouse
Albany, Oregon 97321

EDUCATION, RECREATION, ETC. (continued)

Parks & Recreation Dept. (none for county)
City Hall
Corvallis, Oregon 97330

Oregon Medical Assn.
2164 S. W. Park Place
Portland, Oregon 97205

Lane County Medical Society
740 13th East
Eugene, Oregon 97401

WATER RESOURCES

Flood & Drainage:

Corps of Engineers (page 60)

County Engineers (page 60)

Oregon State University
Corvallis, Oregon 97331

Soil Conservation Service (page 61)

State Engineer
1178 Chemeketa Street N. E.
Salem, Oregon 97310

State Water Resources Board
500 Public Service Building
Salem, Oregon 97310

Ground Water:

State Department of Geology
1069 State Office Building
Portland, Oregon 97201

State Engineer (see above)

U. S. Geological Survey
Portland and Eugene (page 62)

Storage:

Bureau of Reclamation
1775 32nd Place N. E.
Salem, Oregon 97303

Corps of Engineers (page 60)
Soil Conservation Service (pg. 61)
State Engineer (see above)
State Water Resources Board
(see above)

Quality:

Federal Water Quality Admin.
1200 Sixth Avenue
Seattle, Washington 98101

Dept. of Environmental Quality
720 State Office Building
Portland, Oregon 97201

LAND RESOURCES

Geology:

State Dept. of Geology (see above)
Soil Conservation Service (pg. 61)

U. S. Geological Survey (pg. 62)
Portland and Eugene

LAND RESOURCES (continued)

Geology Department
EH 112
Oregon State University
Corvallis, Oregon 97331

Geology Department
University of Oregon
Eugene, Oregon 97403

Soil & Interpretations:

Cooperative Extension Service
Oregon State University
Corvallis, Oregon 97331

Lane Coop. Ext. Service
950 13th Avenue West
Eugene, Oregon 97402

Benton Cooperative Extension Service
P. O. Box B
Corvallis, Oregon 97330

Linn Coop. Ext. Service
P. O. Box 765
Albany, Oregon 97321

Counties:

Benton County Sanitarian
Courthouse
Corvallis, Oregon 97330

Linn County Soil Scientist
Courthouse
Albany, Oregon 97321

Lane County Soil Scientist
135 East Sixth Street
Eugene, Oregon 97401

Soils Science Department
Ag 202
Oregon State University
Corvallis, Oregon 97331

Soil Testing Laboratory
Ag 114
Oregon State University
Corvallis, Oregon 97331

Soil Conservation Service (pg. 61)

FARMS

Cooperative Extension Service
Corvallis, Eugene, Albany
(see above)

Department of Agriculture
Agriculture Building
635 Capitol Street N. E.
Salem, Oregon 97310

Soil Conservation Service (pg. 61)

Oregon State University (pg. 65)

State Soil & Water Cons. Com. (pg. 64)

ASCS--Portland, Corvallis, Albany,
Eugene (page 60)

Farmers Home Administration
1218 S. W. Washington Street
Portland, Oregon 97205

Farmers Home Administration
425 West Second Street
Albany, Oregon 97321

Farmers Home Administration
Room 5, Post Office Bldg.
Eugene, Oregon 97401

VALUE OF FARM MARKETINGS

Same as "Farms", page 66.

Agricultural Economics Department
Cooperative Extension Service
Oregon State University
Corvallis, Oregon 97331

Resource Economist
Soil Conservation Service
1218 S. W. Washington Street
Portland, Oregon 97205

NOTE: Information on Cost-Returns, Agricultural Products and Major Agricultural Processors may be obtained from the same sources as "Value of Farm Marketings," and "Farms."

MAPS

General Highway Maps have been prepared by the Oregon State Highway Department.

Topographic maps may be purchased from the U. S. Geological Survey, Denver, Colorado 80225, or inquire locally.

Oregon's Long-Range Requirements for Water, State Water Resources Board, 1969. (Price: $2.50)

Willamette Basin Comprehensive Study, Willamette Basin Task Force, Pacific Northwest River Basins Commission, 1969.

CLIMATE

Climatological Data, U. S. Dept. of Commerce, National Oceanic & Atmospheric Administration, Environmental Data Service, Washington, D. C.

Climatological Handbook, Columbia Basin States, Pacific Northwest River Basins Commission, Vancouver, Washington.

Snow Load Analysis for Oregon, Soil Conservation Service, Portland, 1971.

Temperature and Water Balance for Oregon Weather Stations, Ag Experiment Station, Oregon State University, Corvallis, May 1963.

POPULATION

Benton County Long Range Planning Report--1968, Benton Cooperative Extension Service, 1968.

Catalog of Federal Programs for Individual Community Improvement, Office of Economic Opportunity, 1972.

General Population Characteristics for Oregon, U. S. Census Publication, 1972.

Lane County Long Range Planning Report--1969, Lane Cooperative Extension Service, 1969.

Oregon Economic Statistics, 1972.

Planning for Tomorrow in Linn County, Oregon, 1967 Long-Range Planning Conference, Linn Cooperative Extension Service, 1967.

LABOR FORCE

Contact the Research and Statistics Section, Oregon State Employment Service, Salem and the local employment offices for the labor force annual summaries by counties, and monthly and average annual employment by major categories and number and percent of unemployed.

PUBLIC UTILITIES

People's Utility District Law, Oregon Revised Statutes, State Engineer, Salem, Oregon 1970.

INDUSTRY

Oregon Blue Book, 1971-72.

Directory of Oregon Manufacturers, Economic Development Division, State Office Building, Portland, Oregon 97201, 1970. (Price: $5.00)

A Directory of Bark Producers and Facilities in Benton, Lane and Linn Counties, Oregon State Forestry Dept., 1967.

Food Processing Opportunities, Harrisburg, Oregon, Industrial Development Department, Pacific Power & Light Company, Portland, Oregon, Sept. 1968.

Wastes in Relation to Agriculture and Forestry, USDA Bulletin #1065.

Wood-Using Industries of the Upper Willamette RC&D Project Area, Oregon State Forestry Dept., 1972.

EDUCATION, RECREATION, ETC.

Appraisal of Potentials for Outdoor Recreational Development, Benton County, Oregon, U. S. Soil Conservation Service, Oregon, Sept. 1969.

Appraisal of Potentials for Outdoor Recreational Development, Lane County, Oregon, U. S. Soil Conservation Service, Oregon, Feb. 1969.

Appraisal of Potentials for Outdoor Recreational Development, Linn County, Oregon, U. S. Soil Conservation Service, Oregon, Nov. 1968.

Central Lane Regional Parks, HUD and Central Lane Planning Council, Eugene, Oregon, 1970.

Eugene-Springfield Metropolitan Area 1990 General Plan, Central Lane Planning Council (now called Lane Council of Governments), Eugene, Oregon; adopted in 1972, after revisions.

Eugene-Springfield Transit Study Report, by AMV for Central Lane Planning Council, 1964.

Recreation & Beauty, University of Oregon Conference, Eugene, 1966.

EDUCATION, RECREATION, ETC. (continued)

Lane County, Oregon, A Planning Reference, Central Lane Planning Commission (now Lane Council of Governments), Eugene, Oregon 1957.

Oregon's Willamette River Park System, Willamette River Park System Committee, State Highway Department, Parks & Recreation Division, Salem, Oregon 1967.

Sewerage Master Plan - Eugene-Springfield Urbanizing Area, Edmundson, Kochendoerfer, Kennedy & Daniel, Mann, Johnson, & Mendenhall, Portland for Lane Council of Governments, Eugene, Oregon, 1970.

Water Master Plan - Eugene-Springfield Urbanizing Area, Edmundson, Kochendoerfer, Kennedy & Daniel, Mann, Johnson, & Mendenhall, Portland, Oregon for Lane Council of Governments, Eugene, Oregon, 1970.

WATER RESOURCES

A Simulation Technique for Determining Long Term Trends in Water Table Fluctuations, Ag. Eng. Dept., Oregon State University, 1966.

Biennial Report of the State Engineer to the Governor of Oregon, Salem, Oregon, 1970.

Columbia-North Pacific Region Comprehensive Framework Study of Water and Related Lands, Pacific Northwest River Basins Commission, 1 Columbia River, Vancouver, Washington, November 1971.

Oregon's Long-Range Requirements for Water, State Water Resources Board, 1969. (Price: $2.50)

Upper Willamette Resource Conservation & Development Project Program, 1964 with amendments in 1965, 1968 and 1970, and annual Programs of of Action, Upper Willamette RC&D Project Office, Eugene, Oregon.

Water Control District Law, Oregon Revised Statutes, State Engineer, Salem, Oregon, 1970.

Water Improvement District Law, Oregon Revised Statutes, State Engineer, Salem, Oregon 1970.

Water Resources Data for Oregon, USDI, Geological Survey, 1968.

Water Resources Development in Oregon, U. S. Army Corps of Engineers, North Pacific Division, Portland, Oregon, 1971.

Water Supply Outlook for Oregon, USDA--Soil Conservation Service, monthly publication.

Willamette Basin Comprehensive Study--Water and Related Land Resources, Willamette Basin Task Force, Pacific Northwest River Basins Commission, 1969.

WATER RESOURCES (continued)

USDA Report on Water and Related Land Resources (Middle Willamette River Basin), 1962.

Willamette River Basin Water Quality Control and Management, USDI, Federal Water Pollution Control Administration (now called Federal Water Quality Administration), Northwest Region, Portland, Oregon, January 1967.

Willamette River, Oregon - Benton & Linn Counties, Flood Information, Interim Report, Corps of Engineers, 1966.

Flood Plain Information, Lane County, Oregon, U. S. Army Corps of Engineers, October 1966.

LAND RESOURCES

See "Water Resources" for a number of publications covering water and land resources.

National Inventory of Conservation Needs, USDA, 1967.

Oregon Soil and Water Conservation Needs Inventory, Oregon Conservation Needs Inventory Committee, January 1971--Published cooperatively by the U. S. Department of Agriculture, Soil Conservation Service, and Agricultural Stabilization and Conservation Service, and the Extension Service, Oregon State University, 1971.

The Willamette - 1970, Annual Report of the Willamette National Forest, USDA, U. S. Forest Service, Eugene, Oregon 1970.

Vegetation of Oregon & Washington, USDA, Pacific N. W. Forest and Range Experiment Station, Portland, Oregon.

Geology:

Geology of the Albany Quadrangle, Oregon, Ira S. Allison, Dept. of Geology and Mineral Industries, Bulletin 37, 1953.

Subsurface Geology of the Lower Columbia and Willamette Basins, V. C. Newton, Dept. of Geology and Mineral Industries, Oil and Gas Invest. No. 2, 1969.

Soil & Interpretations:

Lane County Soils Association Map with interpretive guides, in cooperation with USDA, Soil Conservation Service and Oregon State University--Lane County Government, Eugene, Oregon, 1971.

Published soil surveys, Soil Conservation Service offices in the area.

Soil Handbook, including the soil interpretations (OR-Soils-1) at the local SCS offices.

FARMS, ETC.

Census of Agriculture, Bureau of The Census, U. S. Dept. of Commerce, 1969.

Records at each of the Cooperative Extension Service offices and the Soil Conservation Service offices.

Enterprise Data sheets in each Cooperative Extension Service office.

SCS Cost-returns in each local Soil Conservation Service office.

AGRICULTURAL PRODUCTS

A Guide to Oregon, Pacific Northwest, Agricultural Products, Agricultural Development Division, Oregon Department of Agriculture, 1971.

Oregon's Food & Fiber Industry, Special Report 266 of the Agricultural Experiment Station, Oregon State University, Corvallis, 1968.

MAJOR AGRICULTURAL PROCESSORS

Directory of Oregon Manufacturers, Economic Development Division, State Office Building, Portland, Oregon 97201, 1970. (Price: $5.00)

SCS PHOTO 7-3376-12

Broad nearly level areas, occasionally interrupted by intervening hills--the Willamette Valley.

SCS PHOTO 7-753-101

Planning begins with an inventory of soil resources.

IDENTIFICATION LEGEND

Symbol	Soil Series or Land Types
Ab	Abiqua
Am	Amity
Ap	Apt
Ay	Awbrey
Ba	Bashaw-Cove, undiff.
Bd	Briedwell
Bf	Bellpine
Bh	Bohannon-Digger, undif.
Bn	Brenner
Co	Camas
Cb	Coburg
Ch	Chehalis
Ck	Unnamed
Cl	Clackamas
Cn	Concord
Cq	Cloquato
Cs	Conser
Ct	Courtney
Cu	Cruiser
Cw	Chitwood
Da	Dayton
Di	Dixonville
Ds	Dayton, (Gr. substratum)
Dt	Dayton, thick subsoil
Fg	Fitzgrell
Gl	Goodlow
Ha	Hazelair
He	Hembre
Hg	Honeygrove
Hl	Henline
Ho	Holcomb
Jo	Jory
Ki	Kinney
Kl	Kliskitat-Kilchis, undiff.
Kp	Knappa
Li	Lenslow
Ma	McBee
Mc	McCully
Mn	Malabon
Mp	McAlpin
Mr	Marty
Nb	Newberg
Ne	Nekia-Price, undiff.
Nh	Nehalem
Ns	Nestucca
Pc	Preacher-Slickrock, undiff.
Pe	Peavine
Ph	Philomath
R	Rockland
Sa	Salem
Sf	Sifton
Sx	Salkum
Sn	Santiam
St	Steiwer-Chehulpum, undiff.
Sy	Stayton
Ve	Veneta
Wa	Waldo
Wk	Willakenzie
Wl	Willamette
Wo	Woodburn
Wp	Wapato
Ws	Whetstone
Wz	Witzel-Ritner, undiff.
X	Riverwash

SLOPE GROUPS

Symbol	Dominant Slope Range (percent)
No symbol	0-3, nearly level
B	3-7, gently sloping
C	7-12, sloping
D	12-20, moderately steep
E	20-60, steep and very steep
F	35-90+, very steep

Soil boundary and mapping unit symbol---------- (e.g. WsNe 12)

NOTE: Soil symbols in map delineations are given in order of dominance. Mapping units are listed in the report under the dominant series.

LEGEND

Basin Boundary

Subbasin Boundary

Present irrigated areas

Irrigation Suitability Interpretations

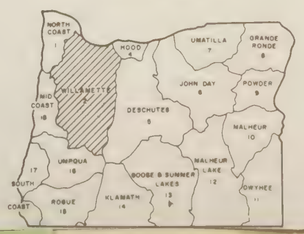
Suitability class[1] (Table 5 in report)

- Excellent
- Good
- Fair
- Poor
- Very Poor (not irrigable)

Most map delineations are rated by the suitability class of the dominant soil and slope phase in the mapping unit. Mapping units composed of less than 50% of the dominant (first named) soil phase are rated by considering suitability of the other components.

[1] The irrigation *suitability* classes are based on soil characteristics only. Climatic, engineering, and economic factors need to be evaluated for determination of irrigation *feasibility*.

DRAINAGE BASIN KEY



COUNTY KEY

Present irrigated areas, Irrigation suitability interpretations and GENERAL SOIL MAP

WILLAMETTE DRAINAGE BASIN

OREGON

1969

OREGON AGRICULTURAL EXPERIMENT STATION AND THE U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE IN COOPERATION WITH THE STATE WATER RESOURCES BOARD

SCALE IN MILES 0 1 2 3 4 5

1:158400

BASE BY OREGON STATE WATER RESOURCES BOARD

WITH THE STATE WATER RESOURCES BOARD

158400

IDENTIFICATION LEGEND

Symbol	Soil Series or Land Types
Ab	Abiqua
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Bd	Briedwell
Bf	Bellpine
Bh	Bohannon-Digger, undif.
Bn	Brenner
Ca	Camas
Cb	Coburg
Ch	Chehalis
Ck	Unnamed
Cl	Clackamas
Co	Concord
Cq	Cloquato
Cs	Conser
Ct	Courtney
Cu	Cruiser
Cw	Chitwood
Da	Dayton
Di	Dixonville
Ds	Dayton, (Gr. substratum)
Dt	Dayton, thick subsoil
Fg	Firgrell
Gl	Goodlow
Ha	Hazelair
He	Hembre
Hg	Honeygrove
Hl	Henline
Ho	Holcomb
Jo	Jory
Ki	Kinney
Kl	Klickitat-Kilchis, undiff.
Kp	Knappa
Li	Linslaw
Ma	McBee
Mc	McCully
Mn	Malabon
Mp	McAlpin
Mt	Marty
Nb	Newberg
Ne	Nekia-Price, undiff.
Nh	Nehalem
Ns	Nestucca
Pc	Preacher-Slickrock, undiff.
Pe	Peavine
Ph	Philomath
R	Rockland
Sa	Salem
Sf	Sifton
Sk	Salkum
Sn	Santiam
St	Steiwer-Chehulpum, undiff.
Sy	Stayton
Ve	Veneta
Wa	Waldo
Wk	Willakenzie
Wl	Willamette
Wo	Woodburn
Wp	Wapato
Ws	Whetstone
Wz	Witzel-Ritner, undiff.
X	Riverwash

SLOPE GROUPS

Symbol	Dominant Slope Range (percent)
No symbol	0-3, nearly level
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F	35-90+, very steep

Soil boundary and mapping unit symbol---------- JoNe D

NOTE: Soil symbols in map delineations are given in order of dominance. Mapping units are listed in the report under the dominant series.

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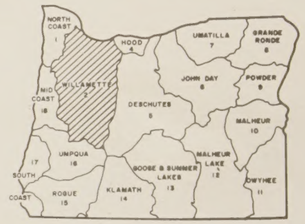
[1] The irrigation *suitability* classes are based on soil characteristics only. Climatic, engineering, and economic factors need to be evaluated for determination of irrigation *feasibility*.

LEGEND

- Basin Boundary
- Subbasin Boundary

DRAINAGE BASIN KEY



COUNTY KEY

Present Irrigated areas, Irrigation suitability interpretations and

GENERAL SOIL MAP

WILLAMETTE DRAINAGE BASIN

OREGON

1969

SCALE IN MILES 1:158400

OREGON AGRICULTURAL EXPERIMENT STATION AND THE U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE IN COOPERATION WITH THE STATE WATER RESOURCES BOARD

BASE BY OREGON STATE WATER RESOURCES BOARD